



NEWS DIGEST

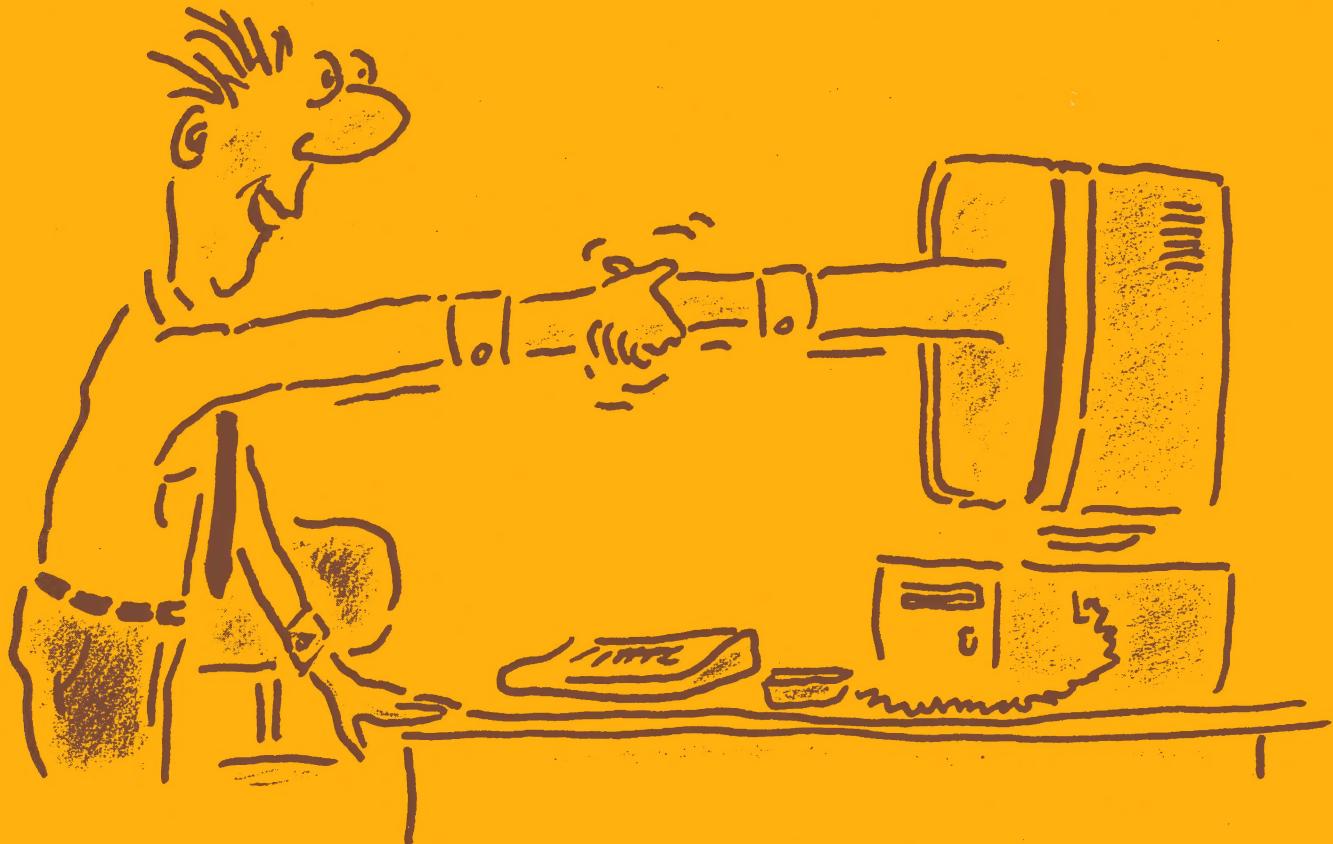
Focusing on the TI99/4A Home Computer

Volume 9, Number 4

May, 1990

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Renew your membership and old acquaintances



Celebrate TIshug's 9th Birthday at the all day workshop

P.O. Box 214, Redfern, New South Wales, Australia, 2016

\$3

TIsHUG (Australia) Ltd.

TIsHUG News Digest

May 1990

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Membership and Subscriptions

Annual Family Dues	\$30.00
Overseas Airmail Dues	A\$60.00

TIsHUG Sydney Meeting

The next meeting will start at 10.00 am on 5th of May at Ryde Infant School, Tucker Street, Ryde.

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TIsHUG Fairware Author of the Month

The Fairware Author for this month is Barry Boone

May Meeting Notes

On Saturday 5th May, the meeting will be the first full day workshop for this year, starting at 10 am. The workshop will not be a tutorial workshop, but a general workshop, where you bring along your own computer and either demonstrate your favourite software or ask for help on a problem you may be having.

Remember, bring your own:

TV or Monitor
Power lead
Computer
Software
etc.

Bring a picnic lunch or buy lunch at the shopping centre next to the school at Ryde. The usual facilities will be available, Shop, Library, etc. If you cannot bring your computer, just come along and join in with someone else.

Russell Welham, Meeting coordinator.

Editor's Comment

by Bob Relyea

I was thrilled at the turn-out at the last meeting and impressed by the range of activities available and the items for sale. I usually arrive at the swap days a little earlier than usual but always seem to be one of the last ones there. This time I was determined to get way ahead of time so I could have a good look at the items for sale before the bulk of the members arrived. I rolled up about 45 minutes before the scheduled start of the meeting and found that the meeting hall was already well populated with members setting out their gear and by others looking for a bargain. Some people must have been sleeping at the door! Anyway, I was looking for a Touch Typing Tutor and got just what I wanted at the right price, so I went away happy.

I noticed that Geoff was kept busy all afternoon diagnosing consoles and giving other bits of technical advice. I am sure that it was appreciated by all. There were even some non-members (who must have seen the advertising) that came and joined in the festivities. That was encouraging to see.

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Co-ordinator's Report

by Dick Warburton

What a time at the buy, swap and sell day at Ryde on Saturday. I counted at least one hundred people there at the one time and others were coming and going. We had quite a few visitors, some of whom were quite surprised at the level of help available through the club. Geoff was busy as usual, sorting out technical problems on his own. Did you get a cup of coffee Geoff? Percy very nearly died of thirst, but one kind member poured a cup for him. It would be really good if we were able to provide a team of members to help others at the meetings, particularly with hardware problems. In time I hope that we can supply our members' needs through the shop by offering exchange consoles etc. Certainly we need more people who can learn to help others with technical problems. I cannot see many of us acquiring Geoff's skills, but we can continue to learn more about our computer. I was pleased at the interest in games as provided through Shane Ferrett and Larry. A competitive spirit was alive and well, helped on I must admit by the sight of a box of chocolates sitting on the monitor. I know that Shane is keen to encourage a larger number of young people to take part. With the next meeting being one where we bring our own consoles and systems, I expect to see considerable interest in the games competition planned. I expect the games side of our meetings to increase, since we have the room to accommodate the players.

We were delighted to have a group from Newcastle spend the afternoon with us. Welcome to Tony and Will McGovern and friends. Come again as soon you can, and spend more time with us. Their demonstration of 80 column Funewriter, and Diskhacker2 was quite impressive I was told. I just wish that I had the time to spend with them. The interest expressed in the 80 column card was quite strong. In fact, movement in this direction by the club may well be the next main project we undertake. With the availability of such good monitors, it would seem silly not to move in this direction, in the near future. We have a variety of projects under way at present, and we hope to be able soon to provide all necessary parts kits through the shop. If you could help to buy parts or put kits together, then give Percy Harrison a call on 808-3181.

A project group has been established, and is operative. They are meeting at Ryde School on the second Monday evening after the monthly meeting from 6 pm. The two major projects we are starting with are the multifunction card, and the monitor interface. These monitors are tremendous value, and if you come to the project group, we should be able to help you make it work. My monitor interface now works quite well (Thanks Alf), and I am delighted with the result. How did I manage with a TV for so long. Bring some tools, your kit, and be prepared to work on your project. This is not intended to be an exercise where we get others to put our kits together. We will be doing it ourselves, with some help if we need it. The Eproms on the Ramdisk project, has struck a problem, in that we are having real difficulties burning our eproms. They may have been a defective batch. We will keep you posted as we make progress in this area.

By the way, I am still trying to get Early learning modules, suitable for kindergarten children, both reading and number. If you can help with educational software for 4-7 year old children, I would be most appreciative.

Financially, the club is still losing ground. Help us now by renewing your membership promptly. Bring a friend to a meeting, encourage people to join the club. Just think, if we each introduced one new member a year, the club membership would double in one year. You can really help the club further by buying your basic computer needs through the shop. We are making a real effort to provide what you want and need. We now stock 3 1/2 in disks as well as 5 1/4 high density disks. If

you need something and we do not stock it, ask Percy to get it in. If there is a reasonable demand, we will provide it for you. If you hear of any bargains let us know so the club members can benefit. If our shop is profitable, we can maintain our level of service to our members. If not, cutbacks will be inevitable.

Next meeting is where you bring your own system. Bring programs, games, problems, consoles to be fixed,etc. What about bringing a friend, or your children. There should be plenty of action, and lots of fun. If you do not have an expanded system bring your cassettes and some modules, and we will see you there.

Dick Warburton. O

The Future of TIsHUG

by Ben Takach

The TI team has created a remarkable machine with the 99/4A, which was several years ahead of its competitors. They had plans to augment the system with added peripherals later on. Alas the dismal marketing strategy killed it in its infancy. This ill-conceived decision was a blessing in disguise. The users realised the dormant potentials and a host of do-it-yourself user-groups have mushroomed around the world. TIsHUG is one of them. TIsHUG by membership is one of the large user groups. The achievements of the group is remarkable. Dozens of hardware developments and projects have been produced by its members during the past 6 years. More important still, the group has provided help to hundreds of computer novices. There is hardly a member in the group who has not dismantled the 99/4A to repair it or to improve it by some of the member-designed hardware. Many of the members learned programming skills through the club, and a good many commercial quality programs have been produced by the members.

The newsletter is by far the best user group publication in the world. I have proudly accepted the praises of American TI-user groups during my trips to the States. The Bulletin Board Service is an incredible achievement. It provides an information service, which would cost several hundred dollars per year subscription fees if it was offered by a commercial operator. The shop was the sole source of supply of 99/4A hardware, software and publications in Sydney for many years. All these and many more creditable achievements have been provided by a small group of dedicated members, at rock-bottom prices. No one made any worthwhile monetary gains, the absolute lack of profit motive was and is an unwritten law of the club.

The inevitable downturn was noticed in 1987. The incredible 99/4A was gradually losing popularity. Non-compatibility with the growing number of IBM clones has forced many TI users to invest in one of the clones and use the TI as a hobby machine or retire it altogether.

At a guess 80% of TIsHUG members own or use an IBM or its clone. It is time for TIsHUG to broaden its base. There is no sin in applying our combined skills to other machines as well as 99/4A. There is no risk that Apple, Atari, Commodore, or IBM users will suddenly take over as, long as the will prevails to support the 99/4A. On the other hand many users of other brands have the same need of support we all had some years back. There are yet unexploited challenges of converting programs from one brand to the other. The potential of a value for money source of supply would be equally attractive to any computer user. Many of the items on sale, such as disks, stationery, hard disks, disk drives, printers and modems are compatible with other brands. Our general activities of tutorials, shop, program exchange, hardware sale or auctions are useful promotional material for a non TI-user membership drive. There are some thoughts for those who are hell-bent on carrying the flag until the ship goes down:

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Secretary's Notebook

by Terry Phillips

The rain held off and members turned out in large numbers to the April meeting. Dick Warburton tells me that at one stage he did a quick head count and there were at least 100 members and visitors in attendance. From my own observations there appeared to be a good number of eager sellers and buyers milling around the tables provided for the BUY SWAP SELL theme of the day, while looking through the window of the room where the shop was operating. Percy was flat out all afternoon, and I was also kept pretty busy taking membership renewals. Geoff, as usual, hardly had time for a breather at his techo corner. The ad placed in the Trading Post seems to have done as intended as a couple of people who came along said they had no knowledge of the group until reading the ad. Dick Warburton also told me that he had about 6 telephone enquiries directly through the ad. Two new members were signed up on the day and it is a big welcome to both:

Loren West and his family from Penrith, and Robert Fozzard from Gladesville.

I hope you both enjoyed your inaugural meeting and that you can get along to many more.

By the way, next months meeting, to be held on May 5, is a full day event, which will commence at 10am. The basic theme is for members to bring along their systems, set them up, and show what they have done or seek guidance with a programming problem, discover how to operate a piece of software or hardware but more importantly just have a good time. If you are experiencing a problem of any kind I am sure there will be someone available who can help you. It is hoped that a BBQ facility will be available for members to cook their lunch, but on the off chance that it is not why not bring along a picnic basket, or take advantage of the food facilities in the nearby shopping mall.

Many members should realise that the end of April marks renewal time. If you are unsure when your membership expires then have a look at the mailing label on your newsdigest. If you see the date 30-Apr-1990 then your membership is now due for renewal. Make a commitment now to renew and keep your group going strongly into the 90's. If you are unsure of membership fees then here is what they are:

ANNUAL FAMILY MEMBERSHIP - \$30 - which includes 11 copies of the newsdigest.

BBS - \$5 - this fee is only for those members wishing to access the bulletin board. The fee is used to offset specific charges relating to operation of the BBS, eg telephone and electricity.

LIBRARY - NO CHARGE - each financial member is now automatically entitled to borrow from the vast written library held by the group. All members are urged to take advantage of this as there is a wealth of TI knowledge to be gained from the books and newsletters that the group has acquired over the years.

BELIEVE IT OR NOT? The month of May marks this groups 9th anniversary. Yes it was in 1981 that a few hard working volunteers got together to form this group and despite this computers orphan status since 1984(or 1983? ED), the group continues to go from strength to strength. This is an achievement that not many other computer groups could boast about, and says a lot for the TI community. John Robinson, one of those original members, was at the April meeting and it was good to see him back chatting with all and sundry.

Due to the hectic nature of the last meeting, your Directors were unable to get together for their executive meeting so there are no decisions in that area to pass onto you. We have set time aside to meet during the next meeting so any news then will be made available through this column.

Faire Speech

by Garry Christensen, Brisbane

I would like to speak about people. People who join USER GROUPS, and just as importantly those who do not!

NOW! We have had in Australia, something in the order of 30,000 TI99/4A computers sold, and yet the number of people who are in User Groups, would be less than one thousand, so there are a lot of computers lying around, sitting in cupboards doing nothing. The reason for this is that the people who purchased these computers, bought them as games machines, paid two hundred dollars, and simply had no idea what it was that they had purchased. Now and then they would have stuck in a games module, played games for a little while, flipped over to basic, copied a program from the manual, and if it came out as in the manual and worked, said "Isn't that great!". They put another module of Space Invaders back in the machine, played the game, and after a while they would get sick of that, and so they would put it back in the cupboard. Every couple of months they would pull it out, play a game and then put it back. Now it is probably down to every couple of years that the poor old TI99/4A sees the light of day.

Now they are not really interested in doing much with their Computer, apart from playing a few games, for they know no better. There are those who have an expanded system and do not join User Groups. We get phone calls in Brisbane from these people, who want to find out about programmes and to answer queries about their machines. We organise them with their program, set them right with their query, and that is the last we hear from them. We have tried advertisements in the paper and we got very little response from that. We listed the user groups in the White Pages and got a few phone calls from people who wanted information about their computer. So we get them set up with programmes, send along brochures telling about the groups, send User Group Application Forms, and that is the last we hear of them, as they do not want to join a group. Once again, even those with expanded systems use it just for a specific purpose. They have their word processor program, a printer, they do their word processing, and that is all they want. They are contented with what they have, do not want any more, and they are not interested in gaining more or new knowledge.

Most USER GROUPS are made up of people who are not contented with the basic layout. They want something better and are not prepared to sit back and say, "YEH! that will do, I do not want anything more.". Most people who join the Groups want better software, better hardware, better communication, either by news letter, or the group's social meetings. There are those who join a club purely for the social side of the club, but these people are in a small minority. The users groups are mostly for those people who require more from their machines, and it is towards these people that the club should aim its activities. The way that can be done is by the NEWSLETTER, which provides software reviews from other club's news letters, software demonstrations of new programs, publishing advertisements of new hardware being manufactured, assembled, and also the availability of it. Tutorials are given by those members who like to write programs, is a forum for those that like to have access to others, so that they can distribute programs that they written to other groups. Interaction between these people is the life blood of programmers. Of course there are those who have such a devotion to the TI99/4A for being such a great, Great Computer, that their interest is primarily in the news of what is happening in the World of the T.I.

As you can see it is the NEWSLETTER that is probably the most important part of a users group activities. Produce a good newsletter and you will have a good following, cater to all these people, keep them happy, and keep them coming back year after year. To make a good newsletter needs the cooperation of many individuals because, as you know, this newsletter reaches all the members of the user group, especially those members who belong to the group but do not attend the meetings.

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EPROM burning

by Craig Sheehan

Abstract

This document details a method used to prepare EPROMs that can be inserted into Horizon RAMdisk on an expanded TI99/4A. The equipment required is a TI99/4A with 32Kbyte memory expansion, disk controller, RS232 interface, P9030 EPROM programmer (manufactured by GP Industrial Electronics, Plymouth) or similar and a suitable connecting cable.

Program Details

Each of the programs for use with the system have been written in c99 and are loaded using Funnelweb's Script-loader. The relevant Script-loader files are LOADINIT and LOADBURN. ESI has been converted into an Editor Assembler program file.

Outline of Method

A disk is initialised using a disk manager for the appropriate number of sectors. It is then re-initialised to a multiple of 64Kbytes using the INIT programs. The software required on the EPROMs is copied onto this disk using a disk manager and then the EPROMs are burnt on an EPROM programmer via a RS232 interface. These burnt EPROMs are placed on the RAMdisk board along with the decoding circuitry and inserted in the ROS using the ESI program.

Preparing a Disk

The first job is to initialise a disk with information about the number of EPROMs forming a block as well as the headers required for the installation software. The format in which the disk should be initialised using a disk manager depends on the number of sectors required.

Formatted	Max sectors	No. of 2K blocks	No. of EPROMs
SSSD	256	32	1
DSSD/SSDD	512	64	2
DSDD	768	96	3
DSDD	1024	128	4
DSSD	1280	160	5

For example, if you wish to place a set of programs on EPROM which were 603 sectors in size, you would need to initialise the disk to double sided double density. Three 64Kbyte EPROMs would be required to hold this data.

After initialising the disk with a disk manager program, it must have some extra information placed on it so that the installation software can recognise the EPROM. In order to add this extra information, the file LOADINIT is loaded using Funnelweb's Script-loader, which is an option on the Loaders menu, option 3 on the Editor Assembler menu. After the program is loaded and running, insert the newly formatted disk into a drive. Enter the drive number into which you have placed the disk, followed by the number of 2Kbyte blocks as suggested by the above table. For the above example you would enter 76 as this is next integer greater than 603 divided by 8. Each block holds 8 sectors. The disk will now be updated with the required information.

Warning: Please note that this program has no error checking and placing anything except a freshly initialised disk in the drive may result in a loss of data.

Once the disk has been prepared in the manner described above, the only thing required before burning the EPROMs, is to copy the files you wish to place on EPROMs onto the disk using a file by file copy option of a disk manager.

Setting up the P9030 Programmer

Before burning the EPROMs, the programmer must first be connected to a TI99/4A's RS232 interface, as well as setting the dip switches on the base of the machine. These must be done while the EPROM programmer power is off.

The RS232 cable required is a 25 pin D type male to 25 pin D type male with the following pins connected straight through: 1, 2, 3, 4, 5, 6, 7 and 20. This cable should be connected from the RS232 port of the TI99/4A to the RS232 port on the rear of the EPROM programmer.

The dip switches on the base of the programmer should now be set as in the following table.

Dip switch	Setting	Function
1	off	not used
2	off	parity off
3	off	7 bits per char
4	on	\
5	off	\ use Motorola
6	on	/ S-format
7	on	/
8	on	\
9	off	9600 baud
10	off	/

Having done this, switch the programmer and the computer on. Then load "LOADBURN" using Funnelweb's Script-loader

Warning: Before doing anything else, press the "DEVICE SELECT" key on the programmer. Use the up and down arrow keys until "27512I" appears, then press "ENTER". Failure to do this will result in damage to the EPROMs. Ensure only 64K by 8 EPROMs are used.

Burning the EPROMs

Firstly, ensure that all EPROMs to be used are blank. This is done by pressing the "MODE" key and then using the up and down arrow keys until "BLANK CHECK" appears on the screen. Insert up to 8 EPROMs in the copy sockets and press "START". After the check is complete, an EPROM socket with a flashing LED is not blank. These should be erased before use.

Remove all except one of the EPROMs. Place the disk which contains the programs to be saved on EPROM into drive one.

Enter "RS232.BA=9600.CR.LF" as the device name and 0 as the first block. Before entering 32 as the number of blocks, press "MODE" and use the up and down arrow keys to find "SINLOD" and then press "START". Enter 0 as the offset for the programmer. Once the busy message appears, answer the final prompt on the computer.

After all the data has been down loaded, "DONE" will appear on the screen of the EPROM programmer. Press "PROG" and enter the following values for "ROM START", "RAM START" and "LENGTH" respectively: 0, 0, 8000 (hexadecimal).

Repeat the above procedure except with a starting block of 16 and a "ROM START" of 8000 (hexadecimal). For the second and more EPROMs, add 32 to block starts each time. Once a complete set of EPROMs has been burnt, they are installed using the ESI software, which is the subject of another document.

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steady supply of electricity; TURPEDO ALLEY, an underwater survival game written in Extended Basic; ACHILLES and the TURTLE, two LOGO games to test your skills; RAZZLE-DAZZLE, a multi-layered animation with sprites. As well there are updates for EVACUPUD and PERSONAL LUAN CALCULATOR.

Owing to a lack of both space and time, the remaining releases will only be listed. Look out for a fuller description next month:

DISK A14 - KINGWRAITH'S LAIR, an adventure game.
DISK A22 - RETURN TO PIRATE'S ISLE, an adventure with graphics.
DISK A34 - SPEED READING, improve your reading speed.
DISK A346 - GAMES OF WIT, complete series of 5 games.
DISKHAULER V2, a utility by Will McGovern.
GRAPHICS GRABBER, a useful screen dump utility.
SUPER-CAT! - a very quick disk cataloguer.

TIsHUG Shop with Percy Harrison

(Inadvertantly left out last month, sorry Percy)

I have no doubt that you will have already read in the Annual Report for 1989 that the shop has been operating at a loss for the last two years. I suggest that the main reason for these losses has been the high cost of software and other merchandise offered by the shop which has compelled quite a number of our club members to source their requirements at lower prices elsewhere.

I am sure that most, if not all, members appreciate that TIsHUG is the best computer club of its kind in this country, offering its members considerably more services and lower priced software programs than any of the other clubs whose main purpose, by the way, is to promote sales of commercial software and hardware. In contrast, TIsHUG not only offers excellent software programs at a relatively low price but also provides many other valuable and useful services at either no cost or at very marginal fees to its members, such as: Equipment Repairs, Project Kits (which increases the power and usefulness of your basic console), Monitors, Disk Drives, Software and Hardware Auctions, Free Tutorials and, above all, personalised assistance to help solve your many and varied problems.

Your Directors are extremely concerned about the loss from shop sales as the continued need to subsidise this area of the club's activities will almost certainly force them to consider closing the club down because we cannot continue to operate the club at a loss and the only other avenue open to us to increase our income is to raise membership fees. This is not seen as an acceptable alternative as we believe it will result in a significant loss of members thus producing an even worse deficit. In order to prevent this from happening, a decision has been made to make an all-out effort to source our future stocks at the cheapest possible price - without accepting a lowering of product quality - and pass these on to its members with an extremely low profit margin. By doing this, it is hoped that you, our members, will give increased support to the continuation of the club and its activities by purchasing most, if not all, of your requirements from the club shop.

The first step towards offering you greater buying power is evidenced by the director's decision to drop the price of club software from \$5.00 to \$2.00 per disk of programs and blank disks from \$12.00 to \$6.50 per box of ten disks. This has been made possible by sourcing disks at a much lower price than has been available to us in the past.

The drop in price of products offered through the shop will result in a much lower profit per item, the end result being that the shop will need to achieve a large increase in sales to show a worthwhile profit at the end of the year. This goal can only be realised if you, our members, increase your purchases through the shop for both software and hardware requirements. At \$2.00 per disk of programs, it is hoped that each of you will purchase these programs direct from the shop rather than pirate them from your mates or copy them at your regional meetings. (This may sound a little unfair but I am aware that such practices do go on).

Should any member feel that additional products should be made available through the club shop or that any of the products offered can be bought at a lower price elsewhere, please bring it to my attention so that we may have the opportunity of providing an equivalent or better service to you.

Products Available from the Shop.

1. Club Software Disks \$2.00 each
(See "Software Column" for details)
2. TI SORT Version 1.0 \$15.00 each
3. Display Master \$15.00 each
4. TI Artist Plus \$25.00 each
5. TI Base \$15.00 each

6. Blank Disks	(box of 10)	\$6.50 per box
7. Micropendiums Vol 5 NO.6,7,9		\$2.00 each
8. Micropendiums Vol 5 NO.12,		\$3.50 each
9. Micropendiums Vol 6 No.2 to 12		\$3.50 each
10. Horizon Ram Disk Eprom Kits		\$20.00 each
11. Lithium Batteries 3.6 Volts		\$3.90 each
12. 8 Ohm Mini Speakers		\$1.50 each
13. MFC Disk Controller Comp. Kit		\$92.50 each
14. 3.5 in. SSDD Disk Drives		\$20.00 each
15. 5.25 in. DSDD Full Height MPI Drives		\$35.00

Do not forget to support your club by purchasing all of your requirements from the Club Shop. ☺

TIsHUG Shop with Percy Harrison

I see that Rolf is keeping up the good work previously done for many years by Terry Phillips in the software column by publishing each month a brief, but good, description of the programs being released for the month. I strongly recommend that you read his article before the monthly meetings so that when you come to the shop you will have already decided which disks you want to purchase.

At each meeting I will make available a couple of copies of all material available from the shop and suggest that you consult these lists to determine your requirements prior to coming to the counter thus avoiding the necessity of having to thumb through boxes of disks and other goodies on the counter.

In order to reduce the shop inventory of programmed disks it is proposed that most disks will be withdrawn from direct counter sales approximately three months after their date of release but they will still be available at the original price by ordering through the shop for delivery at the following meeting. The exception to this however will be the retention of those programmed disks that are in continuous demand.

A new product being made available to our members at a nominal charge is hard copies of program documentation which will be particularly helpful to those who do not yet possess a printer. To obtain copies of any documents that you might need place your order with the shop and they should be available at the following meeting. Cost will normally be in the order of \$1 to \$2 depending on the length of the document.

Finally in consideration of our country members and others who cannot attend our monthly meetings, we will now operate a mail order service to allow you to purchase club software, hardware etc. however we do insist on payment with order and that you include an amount to cover packaging and postage.

Mail orders should be sent to:

P.E.Harrison
3 Storey St.
RYDE NSW 2112

A Selection of Items Available from the Shop

5.25 in. SSDD Disks-Box of 10-----	\$6.50
(will format to DSDD)	
5.25 in. HD Disks-Box of 10-----	\$16.00
3.5 in. DSDD Disks-Box of 10-----	\$15.00
5.25 in. Drives DSDD-----	\$35.00
3.5 in. Drives SSDD-----	\$20.00
Horizon Ramdisk EProms-----	\$20.00
Multifunction PC Board-----	\$30.00
Multifunction Dsk Controller Kit-	\$92.50
Two-way Interface PC Board-----	\$23.00
TI Artist Plus SSSD-----	\$25.00
TI Base V2.04 SSSD-----	\$25.00
TI Sort V1.0 SSSD-----	\$15.00
Display Master-----	\$15.00

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TIsHUG Software Column

by Rolf Schreiber

New software releases for May include the following disks:

DISK A91 is the complete BRIDGE BIDDING series released by TI as 3 disks. The programs were developed by Robert Hammon and Robert Wolff, two well-known bridge players. The disk is DSSD and is also available on 3 cassettes to those members without a disk drive.

Bridge Bidding I is aimed at the intermediate to advanced player and teaches the art of expert bidding. Bridge Bidding II lets you practice slam bidding, while Bridge Bidding III covers competitive bidding. A booklet for each of the 3 bridge bidding packages is available for \$2.00 each.

DISK A131 is the MILTON BRADLEY Arcade Plus Series of video games, originally released in December 1983 for the MBX Expansion System, which featured voice recognition as well as speech synthesis. All these games are available on cassette to those users who have a 32K memory expansion attached. The disk is DSSD and includes the following games:

SEWERMANIA- Defend yourself from attack by killer rats and alligators while you defuse a time bomb in a sewer.

SUPER FLY- Destroy the alien spiders before the next batch hatches and gets you. Watch eggs develop into spiders before your eyes while you maneuver the fly into position to zap the spiders.

SPACE BANDITS- Snatch up space crystals in a 3-D maze while being chased by deadly android guards. Features 3-D movement and visual effects.

BIGFOOT- Dodge boulders and eagles whilst climbing six mountains, each more challenging than the previous, in order to capture Bigfoot. Pick up supplies and gold for bonus points.

METEOR BELT- Let your computer co-pilot warn you of enemy ships in this daring space duel. Destroy meteors and rival spaceships in this fast action game.

DISK A364 is the PROGRAMMING AIDS II utility disk from TI. The disk is SSSD and provides the means by which to sort information into alphabetic or numerical order for reporting or processing purposes. Included on the disk is a disk sort, a ram (memory) sort, a file dump and a merge program. A photocopied manual is available on request for \$2.00 extra.

DISK A372 is Volume 4 Number 3 of the HOME COMPUTER MAGAZINE 'ON DISK' series, and features all the TI99/4A programs found in that issue of the magazine. Included on this SSSD disk is SNAP-CALC, a spreadsheet program in XB; ADDSUB, a preschool addition and subtraction program in BASIC/XB; BARGRAPH, a utility in BASIC to create bar graphs from numerical data entered from the keyboard; CYBER-CIPHER, a game in BASIC where you try to break a top-secret computer access code; WILD KINGDOM, an Extended Basic game where you have to trap tigers in a jungle maze; MISSILE MATH, an educational game in BASIC/XB which helps students to practice their multiplication skills; and LOGO FLAKES, a creative exploration in snowflake design.

DISK A377 is Volume 5 Number 3 of the HOME COMPUTER MAGAZINE 'ON DISK' series, and features all the TI99/4A programs found in that issue of the magazine. Included on this SSSD disk is BUGETTRON, a monthly finance calculator, written in BASIC; GEOMETRIX, a BASIC/XB program which solves problems dealing with the basic shapes of plane geometry; OVER-REACT, a BASIC/XB game which simulates the operation of an electric power generating nuclear reactor. The aim of the game is to keep the reactor operating smoothly whilst generating a

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SAVE to a protected file.

OPEN a protected file in a mode other than INPUT.

I/O ERROR CODES

I/O errors detected by the disk peripheral software are always indicated by BASIC in the following format:

* I/O ERROR xy [IN 111]

The digits "xy" indicate the type of error that has occurred. The first digit (x) indicates the I/O routine in which the error occurred. The following I/O routine codes can be given:

- 0 Error in OPEN routine
- 1 Error in CLOSE routine
- 2 Error in READ routine
- 3 Error in WRITE routine
- 4 Error in RESTORE routine
- 5 Error in LOAD routine used during OLD
- 6 Error in SAVE routine
- 7 Error in DELETE routine
- 9 Error in STATUS routine used in EOF

The second digit (y) indicates the type of I/O error that has occurred. There are 8 different codes with the following meaning:

0 BAD DEVICE NAME - the device could not be found
1 DEVICE WRITE PROTECTED - unprotect the disk and try again

2 BAD OPEN ATTRIBUTE - one or more open options were illegal and did not match the file characteristics.

3 ILLEGAL OPERATION - should not be generated by BASIC for the disk peripheral. Indicates usage of non-existing I/O code.

4 OUT OF SPACE - a physical end of the file was reached, there was insufficient space on the disk to complete the operation.

5 ATTEMPT TO READ PAST EOF

6 DEVICE ERROR - a hard or soft device error was detected. This may occur if the disk was not initialized or was damaged, the system was powered down during disk writes, the unit did not respond, etc.

7 FILE ERROR - the indicated file or volume does not exist; the file type does not match the access code (program file versus data file).

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continued from page 3

This brings me to one unfortunate thing that happens with newsletters, and that is, if someone gets upset, they use the Public Forum to air their complaints, as evidenced 12 to 18 months ago, (perhaps longer) in the U.S.A. with the split that occurred over Graig Miller. Those of you who have read "L.A.99ers" and "Micropendum" newsletters will understand what I am talking about. Another split occurred recently in the States, over the treatment of NYARC owners, by NYARC. It is because people wrote in these public forums to complain, instead of writing to the source of the problem, that is, to NYARC, or to Graig Miller, and making their complaint direct.

It is important that a newsletter be positive. Peter was talking a moment ago about support, and this is important. We must support everyone, regardless of whether you like them or not, because without supporting everyone, this T.I. community is going to fail and go down. It is the importance of that support that will keep the T.I. Community operating.

So just to wind up, if you want to get more out of your user group then remember the following:

No. 1. GET involved. Primarily get involved in newsletter production. Do not let a few have all the say. If you can not write, it does not matter. We do not mind reading gibberish - you should see some of the other user groups newsletters. You sometimes wonder what they are talking about. It does not matter what you write, but write something, make a contribution, get your name in print, make yourself known and be positive. Support the other user groups and support your own. This way all user groups throughout the world will flourish. Thank You.

o

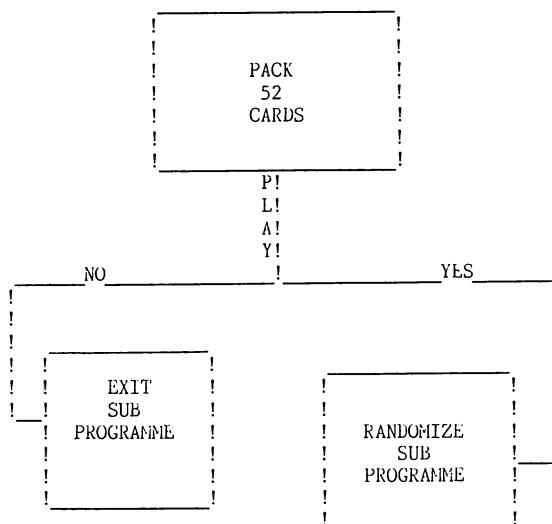
Treasurer's Report

by Geoff Trott

I thought you might like to know how the finances are going so I will present an abbreviated financial statement each month in the magazine. This was supposed to start in April, but I forgot to give it to Bob, so here are three months' worth. If you wish any more information, please ask me. Note that the large deposit in February included the cashing of the last term deposit of \$5000.

Cash at bank at 31/12/89	\$1893.02
Add deposits in January	\$960.00
	\$2853.02
Less expenses in January	\$1008.37
Cash at bank at 31/01/90	\$1844.65
Add deposits in February	\$6916.65
	\$8761.30
Less expenses in February	\$2816.08
Cash at bank at 28/02/90	\$5945.22
Add deposits in March	\$2227.70
	\$8172.92
Less expenses in March	\$2159.05
Estimated cash at bank at 31/03/90	\$6013.87

From here we should have a flow chart to work to.



Bridge on the TI99/4A

by Peter Gleed, Melbourne

Being a Bridge fanatic it always puzzled me why I had not come across any Bridge programmes for the TI (I might be wrong on this point, but I have not come across any), and seeing as I have gone back to doing some programming. I thought that if there is none, then it is about time there was. So after a little time scratching my head and wondering what crazy ideas I let myself in for, the following gem hit me - why not make the programming of this idea a lesson in programming for any new comers? We could also extend the idea to other programmers to join in and make suggestions and show ways where I have been longwinded.

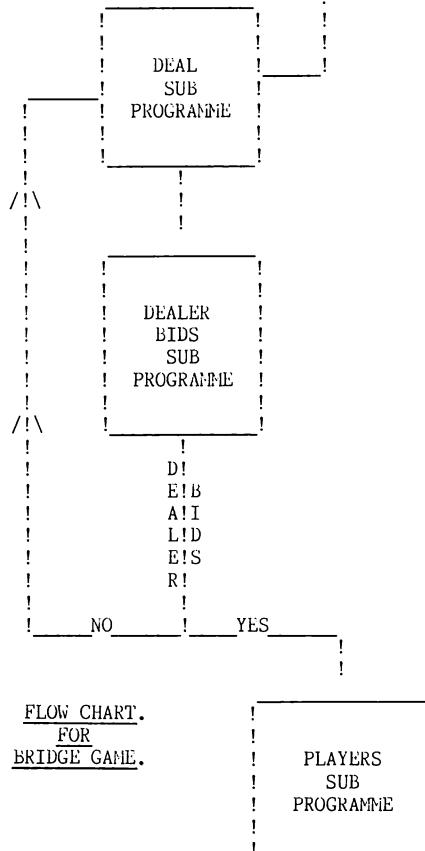
The first thing to do in any programming is to sit down and think out the stages of the problem that has to be solved.

PROBLEM STAGES

1. A PACK OF PLAYING CARDS.
2. SHUFFLE THE PACK.
3. DEAL THE PACK.
4. DEALERS CARDS ARE FACE UP
5. DEALER BIDS, PASS TO CLUBS, DIAMONDS, HEARTS, SPADE, NO TRUMP.
6. AFTER DEALER HAS BID THE COMPUTER BIDS ACCORDING TO HOYLE CONVENTIONS ON BIDDING FOR EACH PLAYER IN TURN. STARTING WITH THE ON THE LEFT OF THE DEALER AND THE IN A CLOCKWISE DIRECTION, FOR THE OTHER TWO PLAYERS.

- 1a. 52 CARDS IN 4 SUITS OF 13 EACH
- 2a. RANDOMISE THE PACK.
- 3a. CLOCKWISE DIRECTION.
- 4a. IN SUIT ORDER SPADES, ON TOP THEN HEARTS, DIAMONDS, CLUBS
- 5a. AFTER DEALER BIDS, THE COMPUTER BIDS EACH PLAYERS BID IN A CLOCKWISE DIRECTION.
- 6a. HOYLES CONVENTION ON BIDDING WILL BE EXPLAINED FULLY WHEN WE COME TO THAT PART OF THE PROGRAMMING.

The above stages should be enough for us to start on the programme, which will be in structured BASIC and consist mainly of sub programmes placed in a top to bottom structure. If this method is chosen it will assist in speeding up the running of the game.



All the above will be altered to suit the operating system such as single disk drive up to full hard disk drives, but more as we progress and please write us or phone us on suggestions or queries.

Renew Now

Techo Time

by Lou Amadio

32K Memory Expansion part 2

This is the second article on how to add 32K memory expansion to the basic (16K) console. The first part was published in the December 1989 issue of the TND. You should refer to this article for basic instructions on how to interface the memory expansion to the back of the GROM port and to the console motherboard.

Remember that Extended Basic or the Editor Assembler modules are required to utilise the additional memory.

This article refers specifically to the use of one 32K static RAM chip (62256 or equivalent) for CPU memory expansion.

Single chip memory expansion can be achieved in several ways:

a) With a Multi-Function Card for the PEB (see separate article).

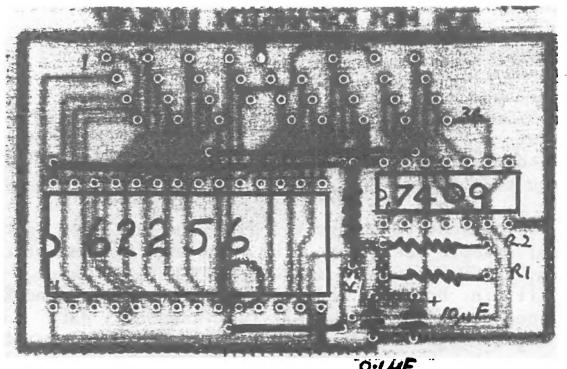
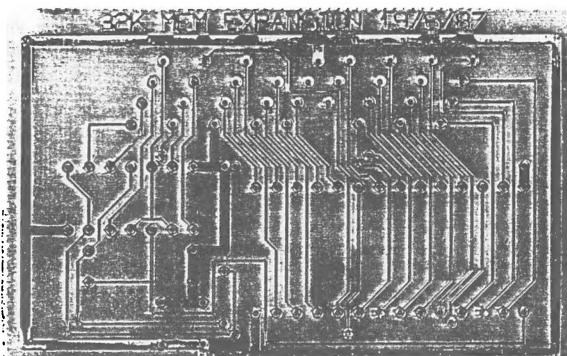
b) With a Mini PE System motherboard which plugs into the expansion port on the side of the console. This is not available as a kit.

c) With a purpose designed PCB for mounting inside the console.

The 32K Memory Board

As for the 8K chip version, a PCB for this project is available through the club shop. Two chips are required (62256, 74LS09) as well as some ribbon cable and a PCB IDC header plug.

Since the TMS9900 CPU 32K memory allocation is in 2 parts, a control chip is required to divide the memory into an 8K and a 24K block. Referring to the circuit diagram below, the 2 input AND gates of the 74LS09 switch the 8K memory blocks in the 62256 static RAM to prevent A000 - BFFF from overwriting 2000 - 3FFF (see December TND on high and low memory allocation).



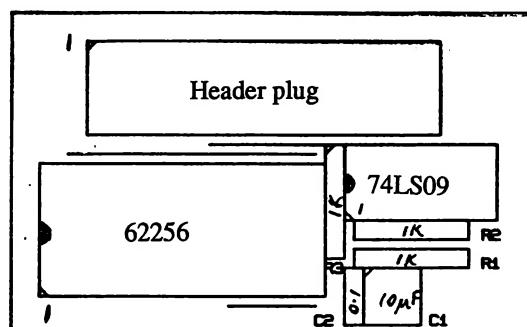
Construction

1) Solder 3 wire links, 3 resistors and 2 capacitors to the PCB as indicated in the overlay diagram.

2) Solder a 28 pin and a 14 pin socket to the PCB as well as the IDC header plug.

3) Plug in the two chips, take care with the orientation. Avoid touching the pins of the memory chip (62256). If the pins need to be bent inwards to fit into the socket, do this by holding the chip on its edge over a flat surface.

4) Wire the ribbon cable to the back of the GROM port using the following table. Allow at least 50 mm clearance between the GROM port and the PCB to clear the upper console case.



GROM Port Connections

Header pin no.	GROM pin no.	function	65256			65256
			Header pin no.	GROM pin no.	function	
1	32	WE(L)	17	1	not used	19
2	30	A3	18	3	D0	18
3	28	A8	19	5	D1	19
4	26	A9	20	7	D7	10
5	24	A10	21	9	D2	13
6	22	A7	22	11	D6	12
7	20	A11	23	13	D3	16
8	18	A6	24	15	D5	13
9	16	A12	25	17	D4	15
10	14	A4	26	19	+5v	
11	12	A13	27	23	A15	10
12	10	A14	9			
13	8	A5	21			
14	6	not used				
15	4	not used				
16	2	gnd				

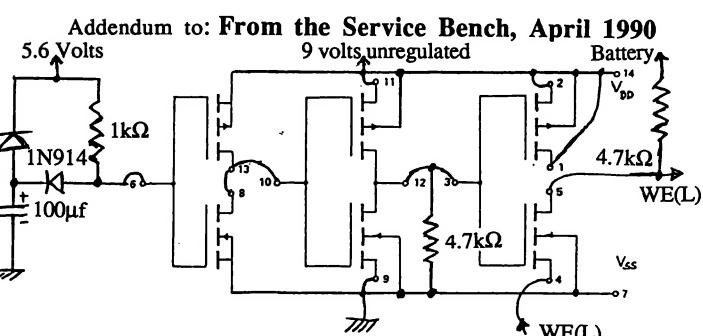
Motherboard connections

28	U504-2	A1
29	U504-1	A2
30	U508-9/10	DBIN(L)
31	U504-14	CS2
32	U504-10	CSA
33	U504-7	CSE
34	U504-9	CSC

74LS09
Pin 13

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Connector available from RAE electronics, an IDC type.



Circuit to preserve contents of RAMdisks on turn on and off.
Uses 4007 IC and goes in series with the WE signal after the buffer.

TI-Base Tutorial

typed by Larry Saunders from Asgard News

What does TI-Base do that the others do not do; even though the others are well designed and certainly intelligently thought out within severe limitations?

TI-Base does everything EASILY, for one thing; and in exactly the ways you want it to, for two. And has so much other stuff that it is going to be fun to grow with and learn with, for three. And lots more, for four.

But, first, user friendliness, I was surprised and very pleased to discover that TI-Base is the most user friendly of the lot. You tell it what to do and it does it.

Let us take a few examples and create a base right away, so you can see what I mean.

You must first decide what you want the base for. Do you want to catalog your book library or all your videos? Do you want a chequebook manager or a mailing address listing or a catalog of your records and tapes? Do you have a collection of anything: old bottles, stamps, coins, insects, computer games and utility programs?

TI-Base will take care of you!

For our purposes, let us decide to catalog some video tapes. You have a collection of 150 videos. Some were purchased. But most were recorded off the air or dubbed by a friend from her collection. Some tapes have movies on them; some have a couple of shows from a series; some have music; some comedy. Whatever.

You have to make some decisions before loading this (or any) data base.

Here are a few things you might want to put onto your base:

- a) Title of program or series (such as OUT OF AFRICA or LITTLE GIRLS BLUE)
- b) Title (or number) of episodes (if series)
- c) Cast (which would include narrator of specials or actors or anchor people or team (if sports))
- d) Date of taping (year is sufficient for most things)
- e) Commercial, Dubbed, Off-air
- f) Type (comedy, documentary, play, sit-com, cricket, movie, music, etc.)
- g) Length
- h) Tape #
- i) Audience (Children, adult (G, PG, AO, R))
- j) Author (if this is one of the criteria important to you)
- k) Comments (plot, topic, etc.)

Then you go through your selections to put them in the order you would like with proper field identifications. Such as:

- 1) Number of tape. We will call this field "#". We will make it three numbers long. It can be up to 255 characters long, but I do not think your video tape library will extend to the thousands. If does, change this to four or five places.
- 2) Title of program or series. We will call this field "TITLE1" and make it 20 characters long.
- 3) Next, episode titles. If you taped a MASH episode, MASH would be TITLE1. The episode might be "Exploding Golf Course" or any title you want. These would be TITLE2, of course. 22 characters.
- 4) To denote Commercial, Dubbed, Off-air, Other you could title this field CDAO. And give it one character length.

5) Type (comedy, drama, sports, etc.) might be called TYPE and given 8 characters.

6) Cast might be called CAST and be given 40 so you can list the major actors, let us say, in GONE WITH THE WIND.

7) If author is important to you (such as a play by Arthur Miller), this could be another field called, AUTHOR, and be given 15 slots.

8) Audience would be for whomever it suits. You could abbreviate to A for Adults, C for Children, E for Everyone, O for Other. Thus titling it ACEO and use up one character. (All this abbreviating business simply takes up less space and sorts faster, but you could have each field of the 17 fields allowed contain 255 characters.)

9) Length of time. You might want to keep this in minutes, call the field LENGTH and have up to five characters for, say, a long mini-series.

10) Date can be DATE and use just the year (which is what I usually do) and be four characters. A date item is also built into the base if you wish to use that with a 10/23/89 style designation.

11) Comments (called COMMENTS) could have up to 17, which is why I chose videos for this tutorial. More fields are required than with books or music audio tapes or addresses. That way, if you follow this tutorial, most others you create will be much easier. Your personal way of cataloguing your video collection would probably be quite different. Which is the joy of TI-Base.

Now we are ready to load up TI-Base. But, first, make up a backup copy of the original and have an initialized disk ready for your data.

TI-Base can be loaded with just your Extended BASIC cartridge or with MiniMemory or Editor Assembler or P-Gram card. You must have a disk drive (obviously) and 32K. If you are fortunate enough to have two or more drives and/or RAMdisk capabilities then you can really go to town. The more heavy duty your system, the more heavy duty the use of such a profound piece of software.

Okay, you load it up from boot and have to wait about 70 seconds. (Note: The new version reportedly loads much faster.) This is a big program with lots of wonderful features.

Title Screen prompts for date. Type in 15/06/89 and all your files done in this session will contain this date. Nice feature.

Once the date is entered a SETUP file scrolls into place. These are your system parameters.

This STATUS reports these following defaults:

```
DATADISK=DSK2.  
PRGDISK=DSK1.  
PRINTER=PIO.PAGE=56  
HEADING=ON  
TALK=ON  
SPACES=1  
RECNUM=ON  
LSPACE=256  
DATE=15/06/89
```

with a dot sitting in the lower left hand corner waiting for you to command.

If you want to change the defaults just type in the change; simple as that. Do the same for any of the others. PRGDISK is the disk where TI-Base is kept. I keep it in Drive 3, which is my DataBioTics Grand RAM 512K (and makes this very fast (all Assembly) data base even more lightning fast). PRINTER as PIO is okay for me but can be changed to RS232. LINE can be up to 134 condensed for columns on your printer or down to any

narrow needs you may have. PAGE length I keep it at 66. I take the HEADING OFF because I am not interested in printing out the headings, as I know what they are.

The TALK I keep ON because I like to see on the screen the commands I am giving to the computer. I changed SPACES between columns to 3. I removed the RECNUM (record numbers) to the OFF position, as the videos will be numbered accordingly, anyway, I keep the LSPACES to encompass the range allocated for local variables.

Everything is entered to my satisfaction. Now I type CLEAR to clear the screen. Is that not simple?

Then I type DISPLAY STATUS to make sure all is well with the new defaults I just created. These are now "PERMANENT" until you want to change any for other reasons.

All the changes come up in the listing. Perfect. (DISPLAY, by the way is a simple yet powerful command. Later, you will see all the other ways to use this.) You may have noticed how EASY, how CLEAR, how QUICK it is to have this base do all the things you want it to. Things get even easier.

Before we get into the base, is there any way to change the white on blue to my favorite green on white? Hee-hee. Keeping with the directness and simplicity of the dot command approach of TI-Base you simply type COLOR DARK-GREEN WHITE. When you ENTER, those colours are there until you type COLOR again.

"All this is very nice", I can hear you say, "but when do we get into our commission of base deeds?" Now, you want to create your video record. Type (of course) CREATE DSK4.VIDEOS. Automatically, you are set up. (Note: be sure to have an initialized disk in Drive 4 (or which ever) turned on before you type in this).

After I have typed CREATE DSK4.VIDEOS (data titles must be 8 characters or less), the screen comes up with some thick lines following a #1. I type "#" in the first bar and ENTER. Cursor jumps to next short bar with the "C" (character) default. I type "N" for number. For the third bar I type in "3" because that is the maximum length of the tape numbers (which could carry me up to 999). Another little bar appears. I type in 0 (zero) as I have no need for decimals in this base. I ENTER each item. Now I am on #2 with the same configuration appearing.

If you look up above at the 11 fields I created, you can see that my #2 will be "TITLE1". So I type this in, select C, and 20 for character length. No little bar appears as there are no decimal notations without a prior number designation.

Then I go to #3: "TITLE2 C 22" and so on. My base will look like this when done:

```
1 # N 3
2 TITLE1 C 20
3 TITLE2 C 22 11 COMMENTS C 255
```

Eureka! Our personal data base for our video library is done in a few minutes, providing you have blocked out previously what you want.

I may make changes at this point or EXECUTE (FCTN[8]). All these functions are on the command strip which comes with TI-Base. Another nice feature. Dennis Faherty, the author of this gem, seems to have thought of everything.

Now Record #1 appears on the screen and we are ready to go. (At this point, looking back over this article, it seems as though the process is difficult. Actually, it is quick and easy and much more difficult writing about this process than doing it. Once you have gone through this thing once, you own it and can set up a zillion bases with ease and alacrity.)

From here on, you simply fill in the blanks you created.

- 1) 001
- 2) MYSTERY
- 3) SCANDAL IN BOHEMIA
- 6) Jeremy Brett, etc.
- 7) Arthur C Doyle
- 8) E
- 9) 60
- 10) 1984
- 11) Sherlock Holmes series on ABC. Excellent.

Do I need any changes? Nope. ENTER. This is automatically recorded as recorded #1 on my data disk.

Now #2 comes up.

- 1) 001 [NOTE: same tape]
- 2) AMERICAN PLAYHOUSE
- 3) GHOST WRITER
- 4) A
- 5) DRAMA
- 6) ***[I do not know the actors and will leave asterisks to EDIT later.]
- 7) Philip Roth
- 8) A
- 9) 120
- 10) 1984

Then #3, And so on.

I do another dozen tapes or so at this sitting, all SAVED automatically. Then I QUIT for the night by typing CLOSE ALL.

Today, I go back to TI-Base. At the command dot I type USE DSK4.VIDEOS. There it is!

I type EDIT just to look over the previous day's efforts. I PAGE forward and back (the 5 and 6 keys) and add things here and there with the normal function keys (such as FCTN[2] for INSERT). Then I am ready to add more.

I type APPEND and my next blank record (#17) comes up, and I proceed in the same way.

After I go through another dozen records, I take a break to play with TI-Base some more. (This is, after all, a program with lots of fun built in.)

Screen Displays:

I type SORT ON TITLE1. Whoooosh! All sorted alphabetically. I least I think so. To check I just type DISPLAY ALL TITLE1 TITLE2 #. I get an instant 3 columns on my screen, alphabetically displayed on TITLE1. Second column is TITLE2; third column is the number of the tape it is on.

While it is still sorted on TITLE1, I decided to DISPLAY ALL # DATE TITLE2 TITLE1 AUTHOR and get five neat columns in the order I just typed. Looks good. I want a hard copy. I type PRINT ALL # DATE TITLE2 TITLE1 AUTHOR. Because I had my printer on, the above structure is printed out as nice and neat as you please.

But I would prefer just TITLE1 and COMMENTS. Another nice presorted print out.

Then I decided I want it done numerically by tape. SORT ON # gives me this instantly. Then I type PRINT ALL # TITLE1 TITLE2. Another instant hard copy configuration.

DISPLAY ALL etc. puts it on screen; PRINT ALL etc. puts it on paper. SORT ON n sorts it instantly on your choice alphabetically (for characters) or numerically (for numbers).

There are loads of other simple and direct commands. And loads of complicated commands if you are into heavy duty data bases. This base lets you go as far as you want.

Super Extended BASIC

by Triton

A Review, by Stephen Shaw, England

Availability: TexComp, Tenex, etc. Price: Around US\$50 plus postage and packing.

This is not a particularly new product, carrying a copyright date of 1987, but I have only just bought one, and as no-one else seems to have reviewed it, here goes.

This is a standard beige module, and it replaces TI Extended Basic, with which it is compatible. New and altered features are listed below.

CALL VERSION returns 120. CALL INIT is not required if you wish to CALL LOAD into the scratch pad RAM addresses, and does not transfer unwanted data to 32K RAM, as TI Extended BASIC does!

LIST now enables printer output to be any width you wish, 28 to match the screen. I found this useful for debugging a members program typed in from a magazine with a 41 column listing!

PERMANENT and RESEQUENCE have been deleted as no-one seems to use them, RES is still available and has been modified to enable you to resequence a part of a program. You can also move, copy or delete blocks of lines. Resequencing or moving blocks will amend all line references throughout the program.

TRACE can now be sent to a printer.

The standard cursor is now an underline, and eight new cursor controls are available, using ESDX with FCTN and SHIFT, or with CTRL.

New calls...

CALL ALL quickly fills the screen with a designated character;

CALL ALOCK, CALL SHIFT, CALL FCTN and CALL CTRL all return a 0 or 1 depending on whether the relevant key is pressed. Caution: there is a "bug" whereby pressing the FCTN key causes the other CALLS to sometimes give false return values!

CALL CHIMES, CALL BEEP and CALL HONK may impress you.

CALL CLOCK and CALL CLKOFF give you the usual interrupt driven clock, in the top right hand corner, which assumes 60 interrupts per second and so runs slow outside the USA. The clock can be set/reset with a CALL LINK.

CALL CLSALL will close ALL open files (handy).

CALL COLORS will quickly change the colours of all character sets.

CALL GOSPRT and CALL STSPRT will stop and start sprite motion, allowing you to set up a multiple sprite image which does not tear apart as it starts moving.

CALL GOTO and CALL GOSUB allow you to use numeric variables for the line numbers. I really do not like this idea at all at all at all.

CALL RESTORE also allows numeric variables to be used for the line number.

CALL KEYS is a really nice one. Let us look at an example:

```
OLD TI Extended BASIC:          TRITON SXB:  
100 CALL KEY(0,A,B)           100 CALL KEYS("ESDX",B)  
110 IF B<1 THEN 100  
120 B=POS("ESDX",CHR$(A),1)  
130 IF B<1 THEN 100  
    NOTICE ANY DIFFERENCE...
```

CALL NEW and CALL BYE are fairly obvious! CALL RUNPROG allows the use of a string variable.

CALL CAT to obtain a disk directory from command mode only is very useful. CALL PEEKV and POKEV read and write VDP RAM, while CALL PEEKG reads GROM. There is also a POKEG should you have a module with GRAM (know of any??). CALL QUITON and CALL QUITOFF fairly understandable.

CALL SCROFF and CALL SCRON turn the screen display on and off.

In addition, if you have 32K RAM, you can access a

bit map graphic utility, which is Quality Software's DRAW'N'PLOT, actually built into the module. Set up is a little awkward as you must use CALL FILES(2) rather than the default (3), but otherwise quite easy.

CALL DRAWNPLOT sets it up, and CALL LINK("GCLEAR") sets up memory for you.

You can then construct a picture in a pad area, using CALL LINK's to MOVE, DRAW, CIRCLE, SQUARE, LABEL, and then move the picture from pad to screen with SHOW.

Or you can use your joystick to draw a picture by linking to EDIT, which gives a number of single key press commands for clearing the screen, inputting text, drawing lines, squares and circles, filling shapes with black, toggle write/erase. From both SHOW and EDIT exit is by pressing Key E.

Pictures can be dumped to printer in two sizes. (Manual error here. Do not use "PIO" as suggested, but the more normal graphics "PIO.CR".) Pictures can also be saved and loaded to disk.

Extra Extra Extra... Read all about it... It is not mentioned in the manual, but the disk files are compatible with TI-Artist, and you can scan a disk of TI-Artist pictures (print them even) without loading any external programs. Here is the SXB program to do that:

a. Set up in command mode:

```
CALL FILES(2)  
NEW  
CALL INIT  
CALL DRAWNPLOT  
CALL LINK("GCLEAR")
```

b. Now run program:

```
100 DISPLAY AT(4,2)ERASE ALL:"TI ARTIST FILE NAME?"  
110 DISPLAY AT(6,6):"DSK1.      _P"  
120 ACCEPT AT(6,9)SIZE(-10):A$  
130 A$="DSK"&$&" P"  
140 CALL LINK("GLOAD",A$)  
150 REM PRESS E TO EXIT  
160 CALL COLORS(2,15)  
160 PRINT "PRESS S TO PRINT SMALL PIC"  
170 PRINT "PRESS L TO PRINT LARGE PIC"  
180 PRINT "PRESS C TO CONTINUE"  
190 CALL KEYS("SLC",A)  
200 ON A GOTO 300,400,500  
300 CALL LINK("CDUMP","PIO.CR"):: GOTO 500  
400 CALL LINK("LDUMP","PIO.CR")  
500 CALL LINK("GCLEAR")  
510 GOTO 100  
520 END
```

Note: the DRAWNPLOT machine code is transferred from the module to low memory, the 8K area of the 32K RAM, so there is little room for other machine code routines to co-reside. The actual plotting takes place in high memory (the 24K area used by your Extended BASIC program) so there is only some 17K available for your Extended BASIC program.

In practice, I have found that when using a small Extended BASIC program to do some heavy plotting, there has been interference with VDP RAM, which is not supposed to be used until you transfer the image with SHOW. At the lowest level this interference took the form of odd recolouring or character redefinitions, but at the extreme, frame hold was lost and the console locked up. I encountered no problem using EDIT or GLOAD, only in producing high resolution graphics from a running Extended BASIC program using the LINKs provided, and then only after heavy repetitive use.

Provided you are not using GSAVE, it appears to be an adequate solution to insert a CALL DRAWNPLOT (not documented but you can use it in a running program), in between each plot in order to clear this problem, but if you use GSAVE, I have not yet found a solution, and would welcome suggestions! As it stands, if you use an Extended BASIC program to plot a picture then GSAVE it, you really need to restart the program for a further plot, otherwise the Extended BASIC screen will corrupt and you may lock-out.

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Test Driving PC-Transfer

by Ben Takach

This review of Mike Dodds' remarkable program would have been published sometime in late 1988, if Genial Computerware had fulfilled my order. Although I sent an order together with a cheque for US\$27- on the 30th May 1988 to the address printed in the April 88 issue of the Micropendium, the program has not been received to this day. I gave up arguing after 3 letters remained unanswered. This episode ought to excuse me for pirating my copy one year and 8 months after I paid for one.

It is surprising that in all these years only 2 programs have been released to transfer files from the TI to IBM compatibles and vice-versa. Albeit none of these are fully compatible with the TI99/4A. CorComps' TI/IBM Connection will only work with the CorComp Disk-control card, and PC-transfer also has problems with compatibility. It is also surprising that lengthy reviews and the respective program documentation will omit to mention the limitations of compatibility.

Comparing the CorComps IBM/TI connection with PC-transfer even after the first use will show the superior features of the latter. It will format an IBM disk, it will allow the user to change the file names to be compatible with the respective systems, it does not seem to have any file-size limitation. On the other hand, the documentation issued by CorComp is far more comprehensible. It contains some useful notes on the conversion of non ASCII files from one system to the other. Both programs will convert ASCII files only. This is fine, since XB programs would not run on an IBM PC or its clones anyway. Albeit, it also makes the modification of an IBM program for TI use or the other way around a lot simpler and quicker. At least the drudgery of typing in a lengthy code again from start to finish may be avoided.

Both systems have means to convert a Basic program to ASCII file and also to reconvert an ASCII file into Basic program format. Thus one can edit the program using a word processor prior to program conversion, then polish off the odd problems by running the converted program. Such a task of course sounds simple, until one encounters a TI line with Accept at (r,c) size (-n) Validate (numeric) Statement, which will need a subroutine of some 50 lines to convert it efficiently for IBM use. Likewise this innocent looking subroutine found in an IBM program would give any TI programmer a sizeable headache:

```
1000 A$="" : POKE VARPTR(A$),X2: POKE
VARPTR(A$)+2,INT(X3/256)+60:POKE
VARPTR(A$)+1,X3/256):6:RETURN.
```

In short, both programs could do with better documentation.

Using the PC-TRANSFER is a breeze. Once it is up and running everything is menu driven and it runs not unlike a conventional disk manager program. One has to remember one keystroke only:C for copy. The other, E for execute is displayed on the screen. I have converted a disk full of TI files in about 20 minutes including formatting the IBM disk on the TI.

Naturally one has to edit the converted files on the other system to delete the odd garbage, which results from the non-system compatible embedded formatting commands line feeds and carriage returns. Also the end of file characters used by the TI will leave something like 20 characters of mysterious code at the end of the IBM file.

The conversion of IBM files to TI format is just as easy. Again these have to be edited on the TI after conversion. I have also converted a short TI Basic program carefully put together using compatible commands and avoiding multi-statement lines to IBM format. The conversion process followed the CorComp recommendations.

First the program was LIST-ed to disk from the memory (LIST"DSK1.TEST-PROG"). Next, it was converted to IBM format with the new file name TEST.TXT. The disk was transferred to the IBM machine and the end of file garbage deleted in edit mode using the well-known PCTOOLS utility. The file name was also changed to TEST.BAS although this is not essential. The BASIC interpreter was loaded next and the converted file loaded from Basic A:LOAD"TEST.BAS", followed by RUN and RETURN. It executed without any hitch.

I suppose doing it the other way around would have worked also, however converting from ASCII to program format on the TI is somewhat more time consuming. Converting assembly code from one to the other is of course out of the question.

This review would be incomplete without highlights of the bad features. The brief documentation explains the boot up methods for the various TI-hardware configurations. MG GRAM Kracker, MechatronicsXB, or TRITON Super Extended BASIC will auto load PC-Transfer from the Extended BASIC menu option from DSK1. From E/A opt.5 one may load the program through specific program files depending on the disk control card used (Myarc,Corcomp or the 9640 version of CorComp). The program however will not run with the Myarc Hard-disk Control card. I had to pull the hard-disk card out and plug in the Myarc floppy disk control card to make the program work. The program will load and boot with the hard disk card in the PE box, however it will not access any of the floppy drives, nor will it access the DSK1.directory of the Hard-drive.

To sum up, PC-Transfer is another useful tool for the TI users. It makes life easy for those, who have to transfer files to or from IBM compatible machines. It works fast and is easy to use. It formats IBM disks. This is a most desirable feature as many TI users have no access to an IBM machine.

On the negative side: The documentation should be augmented by tutorials. A version compatible with the Myarc Hard-disk Control Card ought to be released. O

continued from page 2

- The directors have full control over membership; if the structure of the club is threatened, the membership drive may be terminated.

- TIsHUG is not looking for thousands of new members, and mere 100 would be sufficient.

- There are many systems for sale, some of the non TI-users may purchase some of the pre-loved 99/4A's just to have an inexpensive computer to learn what makes the beast tick.

So, from where I sit, my advice is to reach out and dilute the dedicated but diminishing camp with a selected bunch of recruits from the outside who would like to learn computing our way. There is no harm in it, and it is to be done before the inevitable extra-ordinary general meeting is called to announce that TIsHUG is no longer viable. I do not think that the 99/4A will die as long as it is supported by its users, but we live in the age of progress and progress we must or die. O

continued from page 5

Packaging and Postage Charges:

Up to 2 Disks-----	\$1.60
Over 2 up to 5 Disks-----	\$2.10
Over 5 up to 12 Disks-----	\$3.00

That is all for this month. It is to be hoped that each member will give added support to the club by increasing their patronage to the club shop and thereby enable the Board to further improve the services available to its members. O

XB Tips, Number 14

by Jim Swedlow, CA USA
edited by Stephen Shaw, England

[This article originally appeared in the User Group of Orange County, California ROM][Edited by S Shaw]

PRODUCT REVIEW: TI-WRITER INSTRUCTIONS AND HINTS

This is crammed with ideas, hints, suggestions and encouragement.

You should print it thru both the Text Formatter and the Text Editor. That way you can see how things were done. Like, for example, printing in compressed type with a line width of 130 characters. I would only quibble with one suggestion: that you start your file on line 0001. I leave that line blank as it is lost if you do a Recover Edit. While it is aimed at the beginner, I would rate this as quite valuable to any TI-Writer user. This program should be in our library by the time this article is published. This program is released as FREEWARE. If you find it useful, send a few dollars to the author, Dick Altman. He earned it as this must have taken quite a bit of time and effort to write. (Available from your disk library as TI WRITER TUTOR)

DISK*LABEL

This month's program is a revision of DISK*LABEL. The printer commands are now at the beginning of the program with full annotation (see lines 180 to 230). You can easily make it work on any printer that prints superscripts (half height letters).

I have made a number of changes in the program. It should be harder to crash now. Also, it will always read the first 23 files on a disk (even if there are not that many files on the disk). This avoids a problem some protection schemes cause. For example, this version works with Advanced Diagnostics.

I recommend that you NOT put the label directly on the disk. I have tried two different types, and both tend to peel. Very bad news if one comes off inside your drive!! Put the labels you got with your disks on the disk and these on the sleeve.

Enjoy.

```
100 ! DISK*LABEL
110 ! VERSION XB.2.1
120 ! BY JIM SWEDLOW
130 ! BASED ON A PROGRAM BY P.C.B. AND W.A.R.
140 ! 09 NOV 85
150 !
160 B,@=1 :: CALL CLEAR :: DIM F$(144),T$(144),Y$(4):: F
FOR I=0 TO 14 :: CALL COLOR(I,16,@):: NEXT I :: CALL
SCREEN(5)
170 GOTO 180 :: A,C,D,J,C$,D$,E$,DS$,CN$,SS$,LF$,IN$ :: !@P-
180 ES=CHR$(27)! ESCAPE
190 DS$=E$&"G"! DOUBLE STRIKE
200 CN$=CHR$(15)! CONDENSED
210 SS$=E$&"S"&CHR$(0)! SUPERSCRIPT
220 LF$=E$&"3"&CHR$(12)! CHANGE LINE FEED TO 12/144 INCH
230 IN$=E$&"@"! INITIALIZE PRINTER 240 Y$(@)="DF" :: Y$(2)="DV" :: Y$(3)="IF":: Y$(4)="IV" :: D$="DSK1."
:: OPEN #2:"PIO" 250 DISPLAY AT(7,10):"DISK*LABEL": :: "Check the position of the labels before
starting."
260 DISPLAY AT(14,6):"Labels/Disk: 1:" Drive:DSK1":"
Comment:""
270 DISPLAY AT(20,@):"ENTER <P>rint <C>hang or:""
<Q>uit
280 ACCEPT AT(21,20)VALIDATE("CQPcpq")SIZE(-@)BEEP:E$ :: IF E$="" THEN 280 ELSE I=ASC(E$):: E$=CHR$(I+32*(I&81))
290 IF E$="Q" THEN CALL CLEAR :: CLOSE #2 :: STOP ELSE
IF E$="P" THEN 330 ELSE DISPLAY AT(20,@): :: :
300 ACCEPT AT(14,20)SIZE(-2)VALIDATE(DIGIT)BEEP:E$ :: IF E$="" THEN 300 ELSE B=MAX(VAL(E$),@)
```

```
310 ACCEPT AT(15,20)SIZE(-@)VALIDATE("12")BEEP:E$ :: IF E$="" THEN 310 ELSE D$="DSK"E$&"."
320 ACCEPT AT(17,6)BEEP:C$ :: GOTO 270
330 C=0 :: DISPLAY AT(20,@):"Initializing": :: OPEN
#:@:D$,INPUT ,RELATIVE,INTERNAL :: INPUT #:@:F$(C),I,
I,I :T$(C)="FREE "&STR$(I) 340 DISPLAY AT(22,@)
:F$(C);";T$(C):: IF C=127 THEN 370 ELSE INPUT
#:@:F$(C+@),I,J,J
350 IF F$(C+@)="" THEN IF C>23 THEN 370 ELSE C=C+@ :: GO
TO 340
360 I=ABS(I):: C=C+@ :: IF I=5 THEN T$(C)="Prog" :: GOTO
340 ELSE T$(C)=Y$(I)&STR$(J):: GOTO 340
370 CLOSE #@ :: DISPLAY AT(20,@):"Printing": :: :: FOR
A=@ TO B :: J=0 :: D=8
380 E$=" " :: PRINT #2:DS$:CN$:F$(0);E$;C$;E$;T$(0);SS
$;LF$:: :
390 FOR I=J+@ TO J+D :: PRINT #2:F$(I);TAB(12);T$(I);TAB
(18);F$(I+D);TAB(29);T$(I+D);TAB(35);F$(I+2*D);TAB
(46);T$(I+2*D):: NEXT I
400 J=J+24-6*(D=10):: IF C>J THEN D=10 :: PRINT #2: :: :
: GOTO 390 ELSE PRINT #2:IN$
410 NEXT A :: FOR A=@ TO C :: T$(A),F$(A)="" :: NEXT A
:: GOTO 270
```

The Communicators

from Ross Mudie

Special Interest Group for users of the TEXPAC BBS.
by Ross Mudie, 9th April 1990.

The BBS has been relocated. The new line was connected by Telecom on the 8th March 1990 (3 days after it was requested) and the BBS was moved on the same day. The new number is (02) 456 4606. The BBS will continue to be available 24 hours per day, 7 days per week. The BBS may be accessed on 2400/2400, 1200/1200, 1200/75 as well as 300/300 using 8 data bits, 1 stop bit and No Parity (8N1). (Program download at 1200/75 is only possible with a constant speed interface type modem).

One member has reported communications difficulties to the new location but no other reports have been received. If you are having problems communicating with the BBS, please advise so that reports may be combined to form a pattern to assist in locating any problems.

Over the past few months the BBS could be best described as under-utilised. Whilst occupancy time has decreased due to more members obtaining 2400 baud modems, there are also less members using the system. Members on TEXPAC are not just limited to downloading programs and files. Any member can upload a TI BASIC, Extended BASIC or implanted assembly program into the User Upload/Download area any time. By arrangement with the Sysop, any member can be given Sub-Editor status which allows files to be uploaded direct to the News area of the BBS.

The BBS is only accessible to registered users. A visitor message is now available for non registered callers. BBS membership is only \$5 extra for TISHUG members, there is no other usage fee. To join the BBS see SYSOP, Ross Mudie, at any TISHUG meeting or call on (02) 456 2122 (preferably between 7.30pm and 9pm on weekday evenings).

Remember the new BBS number (02) 456 4606, 24 hours.

For Sale

Fully expanded system comprising Console, XB module, PE box MFC double density controller and disk drive, RS232, and PIO, all in good order. Asking \$500. Phone 047 392535 A.H. David Corney. Urgently need to sell.

Games Info

by Robert Brown

Hello again, this is my 13th article to this endless series on games and adventures.

In this month we have the solution for Infocom's SPELLBREAKER (sequel to Sorcerer). This solution will last for two months. Here it goes.....

Solve for Infocom's SPELLBREAKER

DO NOT use this unless you are totally stuck. You will spoil it for yourself. When you are totally stuck read it carefully, line by line until you find a bit that you have not done. Then you can usually go on without having to read any further. I am assuming that you have already made a map of the places you have been to, so I will tell you where to go, but not the details of how to get there. Likewise I do not cover the complete nitpicking sequence of "open zipper, take book, learn malyon, malyon statue" but assume you will know to do it where necessary. This solution only demonstrates one method of completing the game. Knowing Infocom, there are undoubtedly other ways of solving the problems and certainly you can tackle many of the problems in a different order to the one given here.

* * *

Wait around while the guildmasters tell you what the problem is, and then, when everybody has been turned into a newt, go South, taking the bread and the fish on the way.

In Belwit square LESOCH will eventually clear the smoke away. Look in your spellbook and see that you now have the BLORPLE spell.

Take the cube and BLORPLE it. You are now in Packed Earth. FROTZ your knife for visibility. Go down.

Try going down again. This time you will succeed. The roc catches you before you hit bottom and takes you to her nest. On the way write "earth" on your cube (with the burin) to identify it.

In the nest take the scroll and GNUSTO the CASKLY spell. You cannot get the cube yet.

BLORPLE the "earth" cube again. This time go East from Packed Earth. Go South to the Ruins Room. Take the zipper and open it.

Put the knife (or other illuminated object) into the zipper. You will find the GIRGOL spell. You cannot GNUSTO this. The zipper is a useful holdall and will protect your possessions from water damage.

BLORPLE the "earth" cube again. This time go South to Cliff Middle. Take the scroll and GNUSTO the THROCK spell. Go Up to Cliff Top. You need to get to the top of the cliff.

Either take a rock or wait for a landslide to start naturally. When the falling rocks are forming a curtain above you (and not before) GIRGOL. You can now climb up the frozen landslide.

Take the gold coin at the Mountain Top and go into the Hermit's Hut. You need to get the white cube.

CASKLY the hut. You can now get the cube.

BLORPLE the new cube to get to the Soft Room. Go South to the meadow. Write "soft" on the new cube to identify it. You need to get the plant.

Pull it twice.

BLORPLE the "earth" cube again. Go West from

Packed Earth to the cave entrance. Go North into the cave. You have to get past the ogre.

Plant the weed then THROCK it. It will grow large and the ogre will begin to sneeze uncontrollably. Go down to his lair and take the scroll and the box. Go back to the cave entrance and GNUSTO the ESPNIS spell.

The gold box is a magical one with a very useful property, but you will read about it later, when you need to know. BLORPLE the new cube. You are now in the Water Room. A little preparation is needed now because you are going to get wet. Learn the BLORPLE spell and then put everything except the bread (or the fish) into the zipper and then close it. Go South. You will fall into the Ocean.

Drop the bread. The grouper will eat it in preference to the bottle or the cube you dropped. Take the cube, then take the bottle.

BLORPLE the cube again. Open the zipper, take the book and GNUSTO the LISKON from the scroll you will find in the bottle.

Go North to the Oubliette. Write "water" on the cube to identify it. Learn the LISKON. Put everything except the frotzed knife into the zipper and close the zipper (you are going to get wet again).

LISKON yourself. Enter the outflow pipe, you will be pushed west, but not so fast that you cannot grab the cube as you go. When you come to the ruined pipe get out of the pipe. You are in the Ruins Room again. Call the new cube "change".

Go North to the Smooth Room. LISKON the snake.

Go North to the Temple. Climb onto the idol and look into its mouth.

Get off the idol. Learn MALYON and ESPNIS. MALYON the idol, wait a move and then ESPNIS him. If your timing is right he will freeze back into basalt with his mouth wide open in a yawn and you will be able to take the cube. (It may take a few tries because the spells do not always work). Call this cube "air".

BLORPLE the "air" cube. Go North to the Glacier and get the scroll. BLORPLE the "air" again, GNUSTO the TINSOT from the scroll and then go West into the Bazaar. Go East into the Emporium. The merchant will show you two carpets. You need one of these.

Offer no more than 200 for the blue one (be sure to specify). He will bargain with you so gradually raise your price until 500 zorkmids is reached. Give your gold coin to the merchant. He will give you the tatty red carpet. Take the blue carpet. Go out of the Emporium and BLORPLE the "water" cube again.

Go North to the Oubliette. Learn TINSOT at least three times then put everything except your FROTZed knife into the zipper and then close it.

TINSOT the outflow pipe twice. The Oubliette will begin to fill with water. At the top, TINSOT the water, climb onto the resulting ice floe and you will be able to go through the trapdoor into the Dungeon.

Take the cube. You can call it "bone". Go to the Cell, REZROV the cabinet and take the moldy spell book. CASKLY the moldy spell book and you will be able to read the SNAVIG spell and GNUSTO it into your own spell book.

Go back to the Dungeon and then Up to the Guard Tower.

Drop the carpet, then sit on it. Fly. This will frighten the bird away.

Four moves to the West you will find the roc's nest. Go Down, get off the carpet, take the cube, sit

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```

100 ! ****
110 ! *AUSTRALIAN FLAG*
120 ! ****
130 ! BY BILL LONGMUIR
140 ! TISHUG JULY 1985
150 ! EXTENDED BASIC
160 ! LIBRARY 111
170 CALL CLEAR :: CALL SCREE
N(12)
180 PRINT " THE AUSTRALI
AN FLAG
----- :: PRINT :: PRINT
190 PRINT "DO YOU KNOW THAT
:-" :: PRINT :: PRINT "
a. THE END OF THE FLAG
NEAREST THE MAST IS
CALLED THE HOIST?"
200 PRINT :: PRINT " b. T
HE END THAT FLAPS IN T
HE WIND IS THE FLY?"
210 PRINT :: PRINT " c. A
FLAG FLYING UPSIDE D
OWN IS A DISTRESS S
IGNAL?"
220 PRINT
230 PRINT " d. A CONTEST
FOR AN AUSTRALIAN
FLAG IN 1901 DREW
OVER 30,000 ENTRIES?"
240 PRINT :: PRINT "PRESS AN
Y KEY"
250 CALL KEY(0,K,S):: IF S=0
THEN 250
260 CALL CLEAR
270 PRINT " THE AUSTRALI
AN FLAG
-----
280 PRINT :: PRINT "THE FLAG
SELECTED WAS MADE UP OF:-"
:: PRINT
290 PRINT " A BLUE BACKGRO
UND FOR THE BLUE OF AUSTR
ALIAN SKIES" :: PRINT
300 PRINT "THE UNION FLAG OF
BRITAIN WITH THE CROSSES
OF :-" :: PRINT " SAINT GE
ORGE (ENGLAND), SAINT AN
DREW (SCOTLAND)&"
310 PRINT " SAINT PATRICK
(IRELAND)."
320 PRINT :: PRINT "(THE RED
'X' OF ST. PATRICK WAS NOT
IN THE BRITISH UNIONFLAG AT
THE TIME OF THE FIRST SE
TTLEMENT BECAUSE IT WAS NOT
ADDED UNTIL 1801, 13"
330 PRINT "YEARS LATER.)"
340 PRINT :: PRINT "PRESS AN
Y KEY"
350 CALL KEY(0,K,S):: IF S=0
THEN 350
360 CALL CLEAR
370 PRINT " THE AUSTRALI
AN FLAG
-----
380 PRINT :: PRINT :: PRINT
" THE FIVE STARS OF THE
SOUTHERN CROSS SET TOWARDS"
390 PRINT "THE FLY OF THE FL
AG SHOW OUR POSITION IN T
HE WORLD."
400 PRINT :: PRINT :: PRINT
" THE SEVEN POINTED COMMON
-WEALTH STAR (ONE POINT FOR
EACH STATE) SITUATED UNDER
THE VERTICLE RED STRIPE OF"
410 PRINT "SAINT GEORGE'S CR
OSS COMPLETES THE FLA
G."
420 PRINT :: PRINT :: PRINT
" THE NEW AUSTRALIAN FLAG
WAS FIRST FLOWN IN SEPTEMBER
R1901."

```

```

430 PRINT :: PRINT "PRESS AN
Y KEY"
440 CALL KEY(0,K,S):: IF S=0
THEN 440
450 CALL CLEAR :: CALL SCREE
N(4)
460 REM ****
470 REM * POLE & BLUE FLAG *
480 REM ****
490 CALL CHAR(47,"OFOFOFOFOF
OFOFOF")
500 CALL COLOR(2,2,4)
510 CALL VCHAR(4,4,47,21)
520 CALL CHAR(48,"FFFFFFFFF
FFFF")
530 CALL COLOR(3,5,5)
540 FOR ROW=1 TO 16
550 CALL HCHAR(ROW+3,5,48,24
)
560 NEXT ROW
570 REM ****
580 REM * ST. GEORGE CROSS*
590 REM ****
600 CALL CHAR(56,"FFFFFFFFF
FFFF")
610 CALL COLOR(4,16,16)
620 CALL CHAR(64,"FFFFFFFFF
FFFF")
630 CALL COLOR(5,7,7)
640 CALL HCHAR(4,5,56,9):: C
ALL HCHAR(5,5,56,9)
650 CALL HCHAR(6,5,64,9)
660 CALL HCHAR(7,5,56,9):: C
ALL HCHAR(8,5,56,9)
670 CALL VCHAR(4,9,64,5)
680 REM ****
690 REM *ST. ANDREWS CROSS*
700 REM ****
710 CALL COLOR(9,5,16):: CAL
L COLOR(10,5,16):: CALL COLO
R(11,5,16):: CALL COLOR(12,5
,16)
720 CALL CHAR(96,"0100000000
0080E0"):: CALL CHAR(97,"F8F
FFFFFFF000000")
730 CALL CHAR(98,"FF7F1F0F03
000000"):: CALL CHAR(99,"000
80C0F8000000")
740 CALL CHAR(100,"FFFFFFFFF
FFF3FOF"):: CALL CHAR(101,"0
30100000000000")
750 CALL CHAR(102,"F8F8F8F8F
8F8F8F8"):: CALL CHAR(103,"F
8F8781800000000")
760 CALL CHAR(104,"1F1F1F1F1
F1F1F1F"):: CALL CHAR(105,"1
F1F1E1800000000")
770 CALL CHAR(106,"FFFFFFFFF
FFEF8FO"):: CALL CHAR(107,"C
0000000000000000")
780 CALL CHAR(108,"FEF8FOC08
000000"):: CALL CHAR(109,"0
003071F7F000000")
790 CALL CHAR(110,"000000000
1071F3F"):: CALL CHAR(111,"F
FFFFFFF000000")
800 CALL CHAR(112,"000000FFF
FFFFFF"):: CALL CHAR(113,"F
FFCFOE080000000")
810 CALL CHAR(114,"000000FFF
CFOE080"):: CALL CHAR(115,"0
0000000001071F")
820 CALL CHAR(116,"01070F3F7
FFFFFF"):: CALL CHAR(117,"0
000000000083878"):: CALL CHA
R(118,"F8F8F8F8F8F8F8F8")
830 CALL CHAR(120,"000000001
81E1F1F"):: CALL CHAR(121,"1
F1F1F1F1F1F1F1F")
840 CALL CHAR(122,"000000000
0080E0"):: CALL CHAR(123,"F
OFCFFFFFFFFF")
850 CALL CHAR(124,"0000007F1
F070100"):: CALL CHAR(125,"0
0000COFOF8FEFF")
860 CALL CHAR(126,"000000FFF
FFFFF7F"):: CALL CHAR(127,"3
F0F03000000080")
870 CALL HCHAR(4,5,96,1):: C
ALL HCHAR(5,5,97,1):: CALL H
CHAR(4,6,98,1):: CALL HCHAR(
5,6,99,1)
880 CALL HCHAR(4,7,100,1):: :
CALL HCHAR(5,7,101,1):: CALL
HCHAR(4,8,102,1):: CALL HCH
AR(5,8,103,1)
890 CALL HCHAR(4,10,104,1):: :
CALL HCHAR(5,10,105,1):: CA
LL HCHAR(4,11,106,1):: CALL
HCHAR(5,11,107,1)
900 CALL HCHAR(4,12,108,1):: :
CALL HCHAR(5,12,109,1):: CA
LL HCHAR(4,13,110,1):: CALL
HCHAR(5,13,111,1)
910 CALL HCHAR(7,5,112,1):: :
CALL HCHAR(8,5,113,1):: CALL
HCHAR(7,6,114,1):: CALL HCH
AR(8,6,115,1)
920 CALL HCHAR(8,7,116,1):: :
CALL HCHAR(7,8,117,1):: CALL
HCHAR(8,8,118,1)
930 CALL HCHAR(7,10,120,1):: :
CALL HCHAR(8,10,121,1):: CA
LL HCHAR(7,11,122,1):: CALL
HCHAR(8,11,123,1)
940 CALL HCHAR(7,12,124,1):: :
CALL HCHAR(8,12,125,1):: CA
LL HCHAR(7,13,126,1):: CALL
HCHAR(8,13,127,1)
950 REM ****
960 REM *ST. PATRICK'S CROSS*
970 REM ****
980 CALL MAGNIFY(3)
990 CALL CHAR(72,"80EOF8FC3F
0F03000000000000000000000000
0000COFOFC3F1F070100000000")
1000 CALL CHAR(76,"0000000000
0000000080EOF87E0000000000
0000000000000000000000000000")
)
1010 CALL CHAR(80,"000000000
00000000000000000030F1F00000
00000000000001071F3EF8E08000"
)
1020 CALL CHAR(84,"000000010
71F3EFCE0C00000000000000000000
0FOC08000000000000000000000000")
)
1030 CALL CHAR(88,"000000000
0000000000000000300000000000
000000000001071F3EF8E0000000"
)
1040 CALL CHAR(92,"000001070
F3EF8FOC0000000000000003EF8F
0C0800000000000000000000000000")
)
1050 CALL CHAR(128,"000000000
000000000000000000000000000000
007C1F0701000000000000000000")
)
1060 CALL CHAR(132,"000000000
00COFO7C3EOF0300000000000000
00000000000000080EOF83E8F0701
")
1070 CALL SPRITE(#10,72,7,25
,33):: CALL SPRITE(#11,76,7,
25,49)
1080 CALL SPRITE(#12,80,7,50
,32):: CALL SPRITE(#13,84,7,
50,48)
1090 CALL SPRITE(#14,88,7,25
,73):: CALL SPRITE(#15,92,7,
25,89)
1100 CALL SPRITE(#16,128,7,4
9,73):: CALL SPRITE(#17,132,
7,49,89)

```

```

1110 FOR D=1 TO 200 :: NEXT
D
1120 REM *****
1130 REM * 7 POINT STARS SM*
1140 REM *****
1150 CALL COLOR(14,16,5)
1160 CALL CHAR(136,"01010343
7B3F1F1F"):: CALL CHAR(137,
"7FFF0FOFOEOC0808"):: CALL CH
AR(138,"000080869CFCF8F8")
1170 CALL CHAR(139,"FEFFF0FO
F0703010")
1180 CALL HCHAR(7.5,16,136,1
):: CALL HCHAR(8.5,16,137,1)
:: CALL HCHAR(7.5,17,138,1):
:: CALL HCHAR(8.5,17,139,1)
1190 CALL HCHAR(4.5,20,136,1
):: CALL HCHAR(5.5,20,137,1)
:: CALL HCHAR(4.5,21,138,1):
:: CALL HCHAR(5.5,21,139,1)
1200 CALL HCHAR(7.25,136,1):
:: CALL HCHAR(8,25,137,1):: C
ALL HCHAR(7,26,138,1):: CALL
HCHAR(8,26,139,1)

1210 CALL HCHAR(16,21,136,1
):: CALL HCHAR(17,21,137,1):::
CALL HCHAR(16,22,138,1)::: C
ALL HCHAR(17,22,139,1)
1220 REM *****
1230 REM * 5 POINT STAR *
1240 REM *****
1250 CALL CHAR(140,"00000101
03037F3FOFO7070E0C100000000
00008080FCF8E0COCOE060100000
")
1260 CALL SPRITE(#1,140,16,7
6,172)
1270 REM *****
* 1280 REM * COMMONWEALTH STAR
* 1290 REM *****
1300 CALL CHAR(60,"000000000
000181E0FO703010000000101010
1030303030787C7FFFFFFFFF"
)

```

```

1310 CALL CHAR(36,"030F3FFF0
0000000000000000000000000000
FFF1F1F3F3E3C387870604000"
)
1320 CALL CHAR(40,"000000808
08080C0C3CFFFFFEFCFF00000
000000038F0EOCO800000000000
")
1330 CALL CHAR(52,"FFFFFFFFF
8F8F8F87C3C1C1C0E060200C0F0F
CFF00000000000000000000000000
")
1340 CALL SPRITE(#2,60,16,88
,53):: CALL SPRITE(#3,36,16,
104,53):: CALL SPRITE(#4,40,
16,88,69):: CALL SPRITE(#5,5
2,16,104,69)
1350 CALL KEY(0,K,S):: IF S=
0 THEN 1350 ELSE 1360
1360 CALL CLEAR :: CALL DELS
PRITE(ALL):: END

```

Remedy for Alphalock

by John Paine

Originally appeared in TND of May 1987

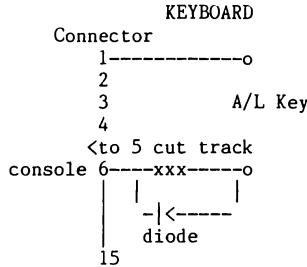
In a recent edition of Micropendium, Mack McCormick described a simple modification to the keyboard interface that would allow you use your joysticks properly irrespective of the position of the ALPHALOCK key.

The ALPHALOCK and UP position of the joystick share the same input line to the TMS9901 I/O chip and as you are aware, when the ALPHALOCK key is down you cannot use the UP position of the Joystick.

The modification consists of simply wiring a small signal diode in series with ALPHALOCK key and cutting a track on the keyboard. The following sketch will show you where to insert the diode. Locate pin 6 of keyboard connector, it will run via the printed circuit to one of two pins connected to the ALPHALOCK key. Cut the track to the A/L key that terminates to pin 6 and solder a diode (1N914, 1N4148 or 1N4001-4) in across the cut track making sure the cathode end (Banded End) goes to pin 6 of the connector and anode goes to the ALPHALOCK key.

After you have reassembled the base of the console, load your favourite game and play. You will note that the A/L key no longer disrupts the operation of the joysticks.

I have modified a number of keyboards with no troubles experienced.



Disc-Controller card for
Peter Schubert's Mini P/E Box
(043) 591532 PAUL

continued from page 14

on the carpet then Up. The baby roc will hatch and eat you if you stay too long. The cube you have just got is the "string" cube. Return East to the guard tower, get off the carpet, take the carpet then Down before the roc reaches you.

BLORPLE the "water" cube again. Learn blorples and SNAVIG then drop everything and go South into Midocean.

Take the "water" cube before the grouper gets it then SNAVIG the grouper. This will change you into a grouper. You will drop the cube. Go down. You will find another cube on the ocean bed.

Hang around until you change back to your original shape, grab both cubes and head for the surface. BLORPLE the "water" cube and collect your possessions from the Water Room. The new cube is "light".

Go north to the Oubliette. BLORPLE the "string" cube. Go South to the Enchanter's Retreat. Belboz will ask you a question. The answer to the question is on the cards that came with the game pack. If your dog has eaten the cards, see the end of the file. Belboz will give you a key. You can ask Belboz about the cubes.

BLORPLE the "light" cube and go east to the Volcano Base. A piece of lava will drop at your feet. TINSOT it and take it.

BLORPLE the "change" cube. Go north from the Changing Room to the Bare Room. Take the compass.

BLORPLE the "change" cube again. Go west to the carving room.

Put the compass in the carving and a hole will open in the north wall.

Take the compass and go north to the octagonal room. If you touch the compass to a silver rune it will open a hole in the wall, provided that arm of the compass is also silver.

One way through from the first Octagonal Room is west, northwest, northeast.

There you have it. Solution Part 1. Next month, Part 2.

Do not forget where to contact me -

141 Beecroft Road
Beecroft 2119 NSW
or
TEXPAC BBS
User name - GAMES.

Reviews

by Stephen Shaw, England

DISK SOFTWARE: WAR ZONE: ASSEMBLY GAME :
Written by Quinton Tormanen.
Published by COMPRODINE. US\$10. Postage \$3.50
Pay by money order only.
COMPRODINE. 1949 Evergreen Ave,
FULLERTON, Ca, USA, 92635.

A good old fashioned shoot 'em up game this one, with a gradually increasing level of difficulty. High scores are kept on disk and there is a demo mode. In short, you operate a ship at the bottom of the screen, which has a limited degree of vertical movement, and also moves left and right, through joystick control.

Scrolling down the screen at various rates are tanks and other -bad- planes which you must shoot before they shoot you. Watch out for the tanks, they can shoot backwards too!

To shoot a tank you move your plane until the tank is centred in a cross hair which is located a fixed distance in front of your plane - to shoot enemy planes you merely line up below them. Fire button covers both instances. Very simple really! Every five levels there is a fast and furious bonus screen which is not unlike space invaders/galaxian, with alien tanks and planes en masse. By no means a sophisticated game, this is for maybe younger owners or older ones with frustrations to take out on something!

DISK SOFTWARE: ARTIST PRINT SHOP by Paul Coleman.
Distributor: Comprodine. US\$25 plus \$3.50 postage.
Money order only.

This is a three disk package for use with TI Artist Instances and Fonts, also using special Border files which have _B suffixes. This package covers three areas of usage, and allows you to print out letter headings (or footings!), A4 posters, or Banners.

The letterheads have optional use of instances, to the left, to the right, or on both sides of text. Instances may have a row x column total up to 300. The text, which is centred, may have one line in any size font, plus up to three lines in one of the many TI Artist fonts which are "one character high" - the manual lists 26 possibilities, and one is included. Then you have the option of a line between the letterheading and your letter. The program then prints as many copies as you wish, and you may then photocopy if required, and refeed the paper into your printer to add your letter.

The Banners may have an instance on the left, the right, or both sides, and as with the letter heading, the instances may be normal or mirror image - and if two are used you may use two different instances or one normal and the other mirrored. The total printing width of an 80 column printer is 60 characters, and this limits the amount of magnification- an instance 12 characters high (eg 96 pixels high) can be printed with 5X magnification to fill the paper width, but if the instance is 7 characters high, maximum magnification will be INT(60/7) = 8X, with a little white space.

BANNERS may be centred or be placed as you wish. They may be "solid" or made up of black squares surround by white frames (eg blocks). NOTE that TI Artist fonts are usually defined as being in the upper portion of a number of characters, and a font which is 33 pixels high, is going to be treated as 5 characters (40 pixels) high, with white space at the bottom.

Signts are A4 - you can do smaller ones of course, but if you opt for a border, the border will always be A4! Inside the border the sign is made up of mixed text and instances, with pretty much the same layout as for banners, BUT if you want instances on the left and right of text, they must be identical! Signs can use two fonts- one any size, the other one character high. Each line may be single or double size. This also applies to instances. If you wish a line to have a single graphic and no text, you can repeat it (and centre it).

There are also four utilities which are useful to have-

i. Font Reader-Short: This reads all font files on a specified drive, and for each one prints out its name, the total number of characters in the font file, the number of characters high the font is (NOT letter height! see ii) and the computer memory required for storage - this package can handle larger font files than TIA but not as large as TIAP! - Signmaker=max 4800 bytes, Banner Maker max=5500 bytes, and Stationery Maker=5060 bytes.

ii. Font Reader-Long: For each font file on the disk you specify this will print the font name, and for each character in the file, its height and width in characters, and its width in pixels including any proportional spacing added to the definition- eg the distance between the start of that letter and the start of the next, not necessarily the printed character width.

This program does not reset your printer before printing out, so if you have printed graphics using other elements of the package, you need to reset line spacing- by for instance turning your printer off and on- before using this utility!

A note on "character" height and width- TIA fonts are defined on disk in terms of character definitions, including a height and width in characters, which are the usual 8x8 size. The proportional spacing is given by a number for the number of pixels to skip between the character start and the next character start. This is the information that this utility reads and prints out. Thus a character listed as being "4" high may in fact be anything from 25 to 32 pixels high. The TIA font file does NOT contain pixel height information. You need to know the height of a font in characters to make good use of the Banner program, as you can quickly determine the range of magnifications available- though the Banner segment will tell you this anyway when you load the font in that segment.

iii) Font Printer- this prints out the first six characters in the font in graphics mode- eg as they look!- with the file name underneath. Only a single file is printed as specified by you. Handy to quickly check the look of a font.

iv) Instance Printer- this will print an instance specified by you, and below that will print the instance name, and then its size in character rows x columns.

The programs are in c99, and operate pretty quickly. They are fairly easy to use and you will be able to obtain acceptable results first time round, and you may possibly even be able to get results without reading the 20 page manual, but of course you are recommended to read it.

ONLY EPSON PRINTERS ARE SUPPORTED, so if you do not have Epson emulation, do not bother! OUTPUT IS TO PIO.CR.

There are similarities between the Signmaker portion of this program and PagePro from Asgard, which sells at the same price. Here are the major differences:

PagePro is limited to two fixed sizes of fonts (8 x 12 pixels and 16 x 24 pixels) - Signmaker uses two fonts per page of which one must be eight pixels high, but the other may be any size.

Signmaker further allows each of the two fonts to be in either of two magnifications, giving you in effect maybe four sizes of font on the same page. PagePro uses 8 pixels width for each small character, whereas Signmaker uses the proportional spacing normal with TI Artist fonts.

PagePro presents you with a "what you see is what you get" screen display, whereas with Signmaker, you have to plan ahead and visualise the page in your head- or in a trial run.

PagePro allows up to 28 different instances per page whereas Signmaker is limited to just 5 instances, although there is limited scope for repeating them.

PagePro allows instances to be placed anywhere on the page whereas Signmaker limits you to placing instances to the left of text, to the right of text, or on both sides of text. Signmaker allows instances to be double or single size whereas with PagePro you have only the original size.

Signmaker uses TI Artist fonts and instances without conversion, whereas PagePro requires you to first use a conversion utility. PagePro has a set of line characters to draw boxes, while Signmaker has a fixed size border- available in a range of patterns. PagePro within limits allows DV80 files to be imported whereas Signmaker insists on each line being typed in!

I think that just about covers the more significant differences- other users will probably want to add more! The two programs are NOT alternates, merely similar, but if your needs are not too defined just yet, perhaps consideration of these differences may help you to define your needs!

DISK SOFTWARE: TETRIS- by Alexander Hulpke.
From User Group Disk Library.
Written in assembly language.

This is one library program I have to review. It is absolutely brilliant. With UK sales topping five million for versions of Tetris on other machines, and at least four versions for the TI, this classic program from the Soviet Union is now available in a smooth machine code version which VERY closely matches the original Mirror-soft release.

Tetromino shapes fall from above, and you can rotate them and move them left and right. You must pack them tightly, and when a line is full of tetromino bits, it is wiped off the screen and all rows above move down one. Naturally you must try to keep the lines moving and prevent them reaching the top of the screen, 'cos that spells GAME OVER. The next shape to fall is previewed on screen, and as an extra touch, this version allows you to change the next shape to fall- during the same time you are moving and rotating the shape then falling. If you do not wish to use this extra facility, ignore it and play the original game!

TETRIS is also available as a coin-op arcade game, and anything that has people putting in their 20p's must be worth looking at! Music plays continuously (turn the sound off!) and the screen also displays the number of lines moved off screen, the level of play, and stats on the number of each colour square to be moved off. In this version the level of play is fixed at the start. Level one is quite hard. I think most of you will find level 9 distinctly impossible! Control is by means of the original keys- 7,8,9 move left, rotate, move right. Space causes the shape to fall quickly once you have the right orientation and position (as does key 4). Key 6 is pause, while key 1 changes the next shape. A classic game, written in 9900 code for the Geneve, and converted down to the TI99/4A (!!!!!), it plays superbly, is very inexpensive, and is an absolute must, even if you do not usually play computer games.

NOTE: This is a FREEWARE game, which does not mean it is free- it means if you play it, you should send funds on to Alexander (or to me for forwarding). The requested sum is US\$10/15, DM20-30, UK7 to UK10 - just look how much disks of this game are on sale for the ST and Amiga. Send funds to S Shaw if you wish, for forwarding.

DISK SOFTWARE- THE GEOMETERS APPRENTICE by Mike McCann 1989. US\$39.95.
Published by McCann Software, P O Box 34160, Omaha, NE, USA, 68134.

Also available from COMPRODINE.

This program has been available for some little time, but so far seems to have escaped review. It comes from the same stable as The Printers Apprentice , and in common with that, is written in forth, and is a fairly difficult program to get into. The advertisement does not really say what the program does- and the sample illustrations are not easy to do - indeed I cannot think how to do them with the program!

TGA does several things:

CAD- computer aided drawing. You can define a shape to be rotated around its left edge to produce a sort of sphere, which can then be drawn in wire frame (see through or visible wires only), and can be shaded with or without segment boundaries- you choose the

shading effects. The object can be moved around the screen, including rotation in three planes, and also the single light source which defines shading effects can be moved in three planes. Objects are drawn singly, but merely by not clearing the bit map screen you can create a multi-object picture. Variables available include aspect ratio, so a drawn circle can be easily made to look like a true circle instead of an oval!

TI Artist pictures can be loaded and drawn over, and the final result can be saved in TI Artist Picture format, or TPA Extern file format. In addition to spherical objects (SPIN objects) it is also possible to draw a shape and have it "extruded"- which merely means it is given a third dimension of thickness. This can then be manipulated as with spheres, and can be mixed with spheres and TIA pictures. So if your 3d pictures can be created using spheres (no matter how distorted!) and shapes with thickness, you can create 3d pics. Each individual shape can be stored as individual "object" files for reuse later. And if you think you might have difficulty drawing a semicircle using the arrow keys, to create a perfect circle there is fortunately an "auto" mode! Actually using the program is quite difficult at first but you will soon get the hang of it if you persevere- rather like TPA really!

There is an interesting HARDCOPY or PRINT feature which allows you to print out the image you have just drawn, or to load a TIA picture and print that- this section is interesting, as it allows you to load TIA pics directly, without conversion, unlike TPA. You may then "clip out" a section you want to print- you do not need to print all of it! Print densities of single, double and quad are available, also with a double pass for extra darkness if you wish. Like TPA you may define the pixel size and shape to print with- at its simplest this will print one dark dot for every pixel in your picture. You may print 64 dark dots instead (8x magnification) or by filling in an 8x8 grid print your picture with many variations in distortion, degrees of darkness, or using a smiley face for each on screen pixel.... and so on! Pics may be printed upright or lengthways, so there is a good banner capability here.

There is also a command language, using DV80 files, this allows you - having done your experimentation! - to automatically create a series of pictures, and save them in TIA format for animation. The language can also be used to load and display TIA pictures as a slide show. Access is given to VDP Register 7 for "pro" users.

This program is NOT inexpensive as TI programs go- it IS inexpensive compared to programs for other machines. Despite having waited what seems like ages for a review which never came before making my purchase, I still received only Version 1.0 - and all current McCann software seems to be for the Geneve only, so there may not be any revisions, and supply may by now be limited! It is a fascinating program if you are into graphics, especially shaded spheres! but is otherwise slightly impractical. You do have the ability of creating quite different demo routines, but need to spend lots of time on them! ☠

continued from page 11

A little extra still; when you press 2 for SXB and let go, auto-load is still operational, but if you hold 2 down, you bypass autoload, which can be a real time saver !

What do I think of SXB? It is a powerful programming tool, with its amendments to TRACE and LIST and its MOVE, DELETE and COPY procedures. The ability to look at TI-Artist pictures (and print them) is also very handy. The ability to get a quick on screen disk directory without loading any other program is also very useful.

All in all, at less than half what I paid for my TI Extended BASIC, a very useful programming tool.

Authors: D.C. Warren, Danny Michael, Mike Dodd, and the graphics routines by M. Shillingburg (and of course TI).

Tips from the Tigercub #41

by Jim Peterson, Tigercub Software, USA

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For descriptions of these send a dollar for my catalog!

This will be the last issue of the Tips from the Tigercub (Actually there will be at least one more issue. ED.)

I started this newsletter over 3 years ago, as a means of promoting my software business. It has never been a success for that purpose, but I have kept it going because of the many interesting newsletters that I have received in exchange, and the many friends that I have made around the world.

I know, from the editors comments in many of your newsletters, that many of you are finding it difficult to finance a newsletter for your shrinking membership,

and even more difficult to find the time, and the material to print. For a one-man user's group pretending to be a business which is getting very little business, it has become impossible. User group members have never been good customers for anyone's software, for reasons which you all know, and those who are remaining active in the TI world are wanting more sophisticated software than I have to offer.

Some of you have offered to subscribe to my Tips, but I just do not have the time to get involved in anything like that. I have had some other projects on the back burner for too long, and it is time I got to work on them - they can hardly turn out to be less profitable than trying to sell software!

I am NOT going out of business, and I am NOT releasing my programs to the public domain. I will continue to sell them, and will continue some classified advertising.

My heartfelt thanks to the many user group editors and officers who have tried in many ways to encourage and help me. Many thanks to those who have purchased my programs.

I will greatly miss your newsletters. I do hope to keep in contact with some of you. Perhaps now I can find time to browse in the TI sections of CompuServe or GENIE, and perhaps I will meet you there.

The answer to the challenge in the last Tips? For a clue, try - DISPLAY AT(24,1):0 in Basic. Still do not get it? In Basic, DISPLAY is the same as PRINT, but AT is not recognized, so the computer thinks you are telling it to print the variable AT(1,1) - which, being undefined, is 0 - and advance to the next line (the :) and print 0.

I have always wanted a pocket calculator with several memories and a window to display the contents of each one. So, since there is plenty of room for windows on a TV screen, I wrote one.

It does not require any use of the Enter key, but each CALL KEY input must be validated and processed, so do not type too fast. It will accept such inputs as M1=7 or M1=7+1 or M2=1-M1= to put a value in a memory, or 6+7= or 6+M2= to calculate and display, or 6+7M1 or M1-.M2M3 to calculate and put into memory, and will even do multiple calculations such as 1+2-3/4*5%6, subtotaling after the first two.

```
100 CALL CLEAR :: CALL SCREEN(5):: DEF S$(X)=SEG$(A$,  
X,1 )&" = " :: CALL PEEK(8198,A) :: IF A<>170 THEN  
CALL INIT  
110 CALL LOAD(-31806,16):: ON WARNING NEXT :: GOTO 140  
120 SET,M$( ),K,S,A$,S$( ),R,C,N,N1,N2,N1F,N2F,M1F,M,MF,DF  
,FF,VF,EF,FL,N$,F2,T,M2,MEM( ),ST,NX,ZF  
130 CALL COLOR :: CALL CHAR :: CALL KEY :: CALL SOUND !  
@P-  
140 FOR SET=0 TO 4 :: CALL COLOR(SET,16,1):: NEXT SET ::  
FOR SET=5 TO 8 :: CALL COLOR(SET,5,16):: NEXT SET ::  
CALL CHAR(64,"0")  
150 FOR SET=9 TO 12 :: CALL COLOR(SET,16,1):: NEXT SET  
160 DISPLAY AT(1,10):"TIGERCUB": MULTIMEMORY@CALCULATOR  
": :"MEMORY #1": :"MEMORY #2": :"MEMORY #3": :"MEMORY  
#4": :"MEMORY #5"  
170 M$(1)="0123456789.+-*%/CXM" :: M$(2)="0123456789.  
AS MDPECM" :: DISPLAY AT(20,1) :"use ?": "(1)  
symbols": "(2) alpha characters"  
180 CALL KEY(0,K,S):: IF S=0 OR K<49 OR K>50 THEN 180 ::  
A$=M$(K-48)  
190 DISPLAY AT(20,1):S$(12); "add"; TAB(16); S$(16); "  
percent" :: DISPLAY AT(21,1):S$(13); "subtract"; TAB  
(16); S$(17); "equals"  
200 DISPLAY AT(22,1):S$(14); "multiply"; TAB(16); S$(18);  
"cancel" :: DISPLAY AT(23,1):S $(15); "divide by"; TAB  
(16); S$ (19); "clear all"  
210 DISPLAY AT(24,1):"M1 to M5 = memories #1 to #5"  
220 R=15 :: C=1 :: N,N1,N2,N1F,N2F,M1F,M,MF,DF,FF,VF,EF  
, FL,ZF=0 :: N$="" :: DISPLAY AT(18,1):"  
230 CALL KEY(3,K,S):: IF S<1 THEN 230 :: CALL SOUND(50,  
500,5):: DISPLAY AT(R,C):CHR$ (K):: C=C+1
```

```

240 ON POS(A$,CHR$(K),1)+1 GOTO 260,270,270,270,270,270,
270,270,270,270,280,290,250,290,290,290,340,
410,420,430
250 IF VF=1 OR MF=1 THEN 290 :: ZF=1 :: N$="-" :: GOTO
230
260 DISPLAY AT(R,C-1):?" :: C=C-1 :: GOTO 230
270 IF MF=1 THEN 260 :: FL=0 :: VF=1 :: IF DF=0 AND ZF=0
THEN N=N+K-48 :: GOTO 230 ELSE N$=N$&CHR$(K):::
GOTO 230
280 IF DF=1 THEN 260 :: DF=1 :: MF,FL=0 :: IF ZF=1 THEN
N$=N$&". " :: GOTO 230 ELSE N $=STR$(N)&". " :: GOTO
230
290 IF C=2 OR FL=1 THEN 260 :: FL=1 :: IF FF=0 THEN 320
300 F2=POS(A$,CHR$(K),1)-11 :: IF VF=1 THEN GOSUB
480
310 GOSUB 520 :: N1=T :: DISPLAY AT(18,1):"SUBTOTAL";T
:: N2F,N2=0 :: FF=F2 :: GOTO 230
320 IF VF=0 THEN 330 :: VF,MF=0 :: GOSUB 480
330 MF=0 :: FF=POS(A$,CHR$(K),1)-11 :: GOTO 230
340 IF C=2 OR(FF=0 AND M1F=0)OR(C=4 AND M1F=0)OR FL=1
THEN 260
350 IF C=4 THEN EF=1 :: M2=M :: N1F,MF=0 :: GOTO 230
360 IF VF=1 THEN GOSUB 480
370 IF EF=0 THEN 400
380 IF N2F=0 THEN MEM(M2)=N1 :: DISPLAY AT(M2*2+2,11):N1
:: GOTO 220
390 GOSUB 520 :: MEM(M2)=T :: DISPLAY AT(M2*2+2,11):T
:: GOTO 220
400 GOSUB 520 :: DISPLAY AT(15,C):T :: GOTO 220
410 DISPLAY AT(R,1):"";"";"" :: GOTO 220
420 MEM(1),MEM(2),MEM(3),MEM(4),MEM(5)=0 :: FOR R=4 TO
12 STEP 2 :: DISPLAY AT(R,10) :"" :: NEXT R :: GOTO
410
430 IF EF=1 AND MF=1 THEN 260
440 CALL KEY(3,K,ST):: IF ST<1 OR K<49 OR K>53 THEN 430
ELSE CALL SOUND(50,500,5):: M=K-48 :: DISPLAY AT(R,
C):CH R$(K)::: C=C+1 :: MF=1 :: FL =0 :: IF VF=1
THEN GOSUB 480
450 IF N1F=0 THEN M1F,N1F=1 :: N1=MEM(M):: IF ZF=1 OR
DF =1 THEN N1=VAL(N$&STR$(N1)):: DF,ZF=0 :: GOTO
230 ELSE 230
460 IF N2F=0 THEN N2F=1 :: N2=MEM(M):: IF ZF=1 OR DF=1
THEN N2=VAL(N$&STR$(N2)):: DF ,ZF=0 :: GOTO 230
ELSE 230
470 GOSUB 520 :: MEM(M)=T ::DISPLAY AT(M*2+2,11):T :::
GOTO 220
480 IF DF=0 AND ZF=0 THEN NX=N ELSE NX=VAL(N$):: DF,ZF=0
490 IF N1F=0 THEN N1=NX :: N1F=1 :: GOTO 510
500 N2=NX :: N2F=1
510 VF,N=0 :: N$="" :: RETURN
520 IF FF=1 THEN T=N1+N2 ELSE IF FF=2 THEN T=N1-N2 ELSE
IF FF=3 THEN T=N1*N2 ELSE IF FF=4 THEN T=N1/N2 ELSE
T=N1 *N2/100
530 RETURN

```

I have always been annoyed by the difficulty of hyphenating with TI-Writer, when I want to avoid the gaping holes that wraparound and Fill and Adjust can cause. Manually filling and adjusting with carets is slow, and leaving a space after the hyphen is unreliable, so I wrote this program.

```

100 DISPLAY AT(2,10)ERASE ALL:"TIGERCUB": HYPHENATED
FILL AND ADJUST"
110 DISPLAY AT(6,1):" Prepare text with TI-Writer":Edit
or Leave left TAB at 0,:"set right TAB at the
actual" :"value of the line length de"
120 DISPLAY AT(10,1):"sired(i.e., for a 28-char":line,
set it at 28,""
130 DISPLAY AT(12,1):" Indent as desired. Center":"
headings as desired but be": sure to follow them
with a ":"line feed(Enter). Hyphenate"
140 DISPLAY AT(16,1):"as desired and follow the":"
hyphen immediately with a": line feed (Enter)."
150 ON ERROR 160 :: GOTO 170
160 ON ERROR 160 :: RETURN 170
170 DISPLAY AT(20,1):"INPUT FILE? DSK" :: ACCEPT AT(
20,1 6)BEEP:F$ :: OPEN #1:"DSK"&F $,INPUT
180 DISPLAY AT(22,1):"OUTPUT FILE? DSK" :: ACCEPT AT(
22,17)BEEP:NFS :: OPEN #2:"DSK"&NFS,OUTPUT
190 DISPLAY AT(24,1):"LINE LENGTH?" :: ACCEPT AT(24,14)
VALIDATE(DIGIT):L
200 LF$=CHR$(13):: H$="-"&CHR$(13)
210 ON ERROR 210 :: GOTO 220

```

```

220 ON ERROR 210 :: RETURN 310
230 LINPUT #1:M$ :: IF M$=" " OR M$=LF$ OR M$="" OR
ASC(M$)>127 OR(LEN(M$)=LAND POS(M$,LF$,1)=0)OR POS
(M$," ",1)=0 THEN 310
240 IF POS(M$,LF$,1)<>0 AND POS(M$,H$,1)=0 THEN 310
250 IF POS(M$,H$,1)<>0 THEN M$=SEG$(M$,1,LEN(M$)-1)
260 IF LEN(M$)=L THEN 310 ELSE P=X+2
270 P=1
280 X=POS(M$," ",P):: IF X=P THEN P=P+1 :: GOTO 280
ELSE Y,P=X :: IF POS(M$," ",P)=0 OR P=L THEN 310
290 M$=SEG$(M$,1,X)&"SEG$(M$,X+1,255):: IF LEN(M$)
>L THEN 310 ELSE P=X+2
300 X=POS(M$," ",P):: IF X=0 THEN P=Y :: GOTO 300 ELSE
GOTO 290
310 PRINT #2:M$ :: IF EOF(1)<>1 THEN 230 ELSE CLOSE #1
:: CLOSE #2

```

Here is one for the preschoolers

```

100 CALL CLEAR :: CALL SCREEN(14):: CALL COLOR(1,11,
11,1 2,5,5):: DISPLAY AT(3,10):"SEE-N-SAY": : :
PRESS ANY KEY " !by Jim Peterson based on a routine
by Michael Lyons
110 DIM E$(16),PAT$(16):: CALL CHAR(123,RPT$("F",16))
120 DATA " ","{","{","{","{","{","{","{","{","{","{",
"","{","{","{","{","{","{","{","{","{","{","{",
130 FOR J=0 TO 15 :: READ PAT$(J):: NEXT J
140 CALL KEY(O,K,S):: IF S=0 THEN 140
150 CALL CHRPAT(K,CP$):: FOR X=1 TO 16 :: Y=ASC(SEG$(CP$,
X,1)) :: E$(X)=PAT$(Y+(Y*57 )*7-48):: NEXT X :::
IF K>96 AND K<123 THEN K=K-32
160 CALL CLEAR :: CALL SAY(CHR$(K)):: FOR X=2 TO 16
STEP 2 :: DISPLAY AT(8+(X/2),12) :E$(X-1);E$(X):::
NEXT X
170 CALL SAY(CHR$(K)):: GOTO 140

```

And so, one more time

MEMORY FULL

Jim Peterson

o

continued from page 27

Console Basic did not possess this constraint. In Basic, the Utility syntax is CALL (utility name, etc.)

The Disk Manager was written especially for the CorComp Disk Controller. We sat down and thought of all the features one would like in a Disk Manager. Just about all of the ideas are in the current Disk Manager. A decision was made to publish the Disk Manager on diskette for the following reasons:

* Easy to Release an Update ~Lower cost to the Customer

The task of figuring out all the technical details of how to achieve compatibility with the TI hardware, software and firmware was a very hard and time-consuming effort. At times, some of the issues seemed almost too much to overcome. In the end, our perseverance and determination were rewarded and the Disk Controller Card reached the market. All the known problems, as of this writing (11/10/84), have been resolved. All other 3rd Party cards are fully compatible with the CorComp 9900 Disk Controller Card.

While writing the manual, we decided to try and present the material in a manner that would allow the beginning user to sit down and follow the guide in a logical step-wise manner. This method allows the user to learn how to utilize the card from its manual in a very straight-forward manner. The manual was also designed for the technically minded individual who could read to the level of detail desired. It required 700 hours of effort preparing the manual before these objectives were achieved.

continued on page 28

TI-Writer Control Commands

typed by Larry Saunders from Asgard News

This is set-out to help anyone using TI-Writer, TI-Writer Version 4.4 and Funnelweb Farm word processing programs. They will work with most Epson compatible printers, but some commands will not work with all. I have tried most of them using the STAR NX1000 and some IBM printers.

PRINTER CONTROL COMMANDS

FONT CONTROL COMMANDS

Select draft quality characters

27,120,48 (on)
27,120,0 (off)

Select draft elite characters

27,73,49

Select NLQ characters

27,120,49

Select NLQ type style

27,107,n

n Type style
0 Courier (initial value)
1 Sanserif
2 Orator with small capitals
3 Orator with lower case

Select Italic characters

CTRL U FCTN R CTRL U 4
27,52

Select upright characters

CTRL U FCTN R CTRL U 5
27,53

Emphasized printing

CTRL U FCTN R CTRL U E (on)
27,69 (on)
CTRL U FCTN R CTRL U F (off)
27,70 (off)

Double-strike printing

CTRL U FCTN R CTRL U G (on)
27,71 (on)
CTRL U FCTN R CTRL U H (off)
27,72 (off)

Underling

27,45,49 (start)
27,45,48 (stop)

Overlining

27,95,49 (start)
27,95,48 (stop)

Superscript

27,83,48

Subscript

27,83,49

Cancel superscript or subscript

27,84

CHARACTER SET COMMANDS

Select standard character set

27,116,48

Select IBM character set

27,116,49

Select IBM character set #1

27,55

Select IBM character set #2

27,54

Select international character set

27,82,n

n Character Set	n Character Set
0 U.S.A	7 Spain I
1 France	8 Japan
2 Germany	9 Norway
3 England	10 Denmark II
4 Denmark I	11 Spain II
5 Sweden	12 Latin America
6 Italy	13 Denmark/Norway

Select slash zero

27,126,49

Select normal zero

27,126,48

CHARACTER SIZE AND PITCH COMMANDS

Pica pitch

CTRL U FCTN R CTRL U P
27,80

Elite pitch

CTRL U FCTN R CTRL U M
27,77

Condensed pitch

CTRL U Shift O CTRL U (start)
15 (start)
CTRL U Shift R CTRL U (stop)
18 (stop)

Expanded printing

27,87,49 (start)
27,87,48 (stop)

Expanded printing for one line

CTRL U Shift N CTRL U (start)
14 (start)
CTRL U Shift T CTRL U (stop)
20 (stop)

Select proportional spacing

27,112,49 or 27,112,1

Select fixed spacing

27,112,48 or 27,112,0

Select master print mode

27,33,n

Function n value

Underline	128
Italic [*1]	64
Expanded	32
Double strike	16
Emphasized	8
Condensed [*2]	4
Elite [*2]	2

[*1] Ignored if the NLQ Type Style switch was pressed during power-up.

[*2] Ignored if the Print Pitch switch was pressed during power-up.

Increase character spacing

27,32,n

n=0 to 127 over 240 inches. n/240

Select double or Quadruple size

27,104,n

n Effect

0 Normal size (turn off)
1 Double-high, Double-wide
2 Quadruple-high, Quadruple-wide
3 Double-high, Double-wide (Lower half ONLY)
4 Double-high, Double-wide (Upper half ONLY)
5 Quadruple-high, Quadruple-wide (Lower half ONLY)
6 Quadruple-high, Quadruple-wide (Upper half ONLY)

Print double-height characters
 27,119,49 (start)
 27,119,48 (stop)

Select character height, width, and line spacing
 27,91,64,4,0,0,n,m

<u>n</u>	<u>Line spacing</u>	<u>Character Height</u>
0	Unchanged	Unchanged
1	Unchanged	Single height
2	Unchanged	Double height
16	Single	Unchanged
17	Single	Single height
18	Single	Double height
32	Double	Unchanged
33	Double	Single height
34	Double	Double height

<u>n</u>	<u>Character width</u>
1	Single width
2	Double width

VERTICAL POSITION COMMANDS

Set line spacing to 1/8 inch
 CTRL U FCTN R CTRL U 0
 27,48

Set line spacing to 7/72 inch
 27,49

Set line spacing to 17/6 inch
 CTRL U FCTN R CTRL U 2
 27,50

Set line spacing to n/216 inch
 CTRL U FCTN R CTRL U 3n
 27,51,n
 n Between 0 and 255. (n=0 is Standard mode).

Set line spacing to n/72 inch
 CTRL U FCTN R CTRL U An
 27,65,n
 n Between 0 and 85. (n=0 is Standard mode).

Execute "A"
 CTRL U FCTN R CTRL U 2
 27,50

Line feed
 CTRL U Shift J CTRL U
 10

Reverse line feed
 27,10 (Ignored when friction feed is used)

Perform one n/216-inch line feed
 27,74,n (Ignored when friction feed is used)
 n Between 1 and 255.

Perform one n/216-inch reverse line feed
 27,106,n (Ignored when friction feed is used)
 n Between 1 and 255

Feed paper n lines
 27,102,49,n
 n Between 0 and 127 lines

Set page length to n lines
 CTRL U FCTN R CTRL U Cn
 27,67,n
 n Between 1 and 255 lines

Set page length to n inches
 27,67,0,n
 n Between 1 and 22 inches

Set top margin
 27,99,n
 CTRL U FCTN R CTRL U 0 (cancels)
 27,79 (cancels)
 n Between 1 and 255 lines.

Set bottom margin
 CTRL U FCTN R CTRL U N
 27,78,n
 CTRL U FCTN R CTRL U O (cancels)
 27,79 (cancels)
 n Between 0 and 127 lines.

Form feed
 CTRL U Shift L CTRL U
 12

Return to top of current page
 27,12

Paper-out detector
 CTRL U FCTN R CTRL U 8 (off)
 27,56 (off)
 CTRL U FCTN R CTRL U 9 (on)
 27,57 (on)

Set vertical tab stops
 CTRL U FCTN R CTRL U B
 27,66,n1,n2,etc,0
 n1, n2, etc. Between 1 and 255 tab stops.

Set vertical tab stops every n inches
 27,101,49,n
 n Between 1 and 127

Set vertical tab stops in channel
 27,98,n0,n1,n2,etc,0
 n is between 0 and 7 other up to 255

Select vertical tab channel
 27,47,n0
 n0 Between 0 and 7.

Vertical tab
 11

HORIZONTAL POSITION COMMANDS

Set left margin restrictions
 27,108,n
 n Between 0 and 255

Pica	0 <n> 76
0 <n> 91	
Condensed Pica	0 <n> 130
Condensed Elite	0 <n> 152
Expanded Pica	0 <n> 38
Expanded Elite	0 <n> 45
Expanded condensed Pica	0 <n> 64
Expanded condensed Elite	0 <n> 76

Set right margin restrictions
 CTRL U FCTN R CTRL U S
 27,81,n

Pica	4 <n> 80
Elite	5 <n> 96
Condensed Pica	7 <n> 137
Condensed Elite	8 <n> 160
Expanded Pica	2 <n> 40
Expanded Elite	3 <n> 48
a 4 <n> 68	
Expanded condensed Elite	4 <n> 80

Set left and right margins
 27,88,n1,n2
 n1 = Left, n2 = Right, restrictions as above

Carriage return
 CTRL U Shift M CTRL U
 13 (if DIP switch 1-8 ON, also does line feed)

Set automatic line feed
 27,51,1
 27,51,0 (cancel)

Backspace
 CTRL U Shift Z CTRL U
 8

Left justify (right ragged)
 27,97,48

Center text
 27,97,49

Right justify (left ragged)
 27,97,50

Set up to 12 horizontal tab stops
 CTRL U FCTN R CTRL U D

Set horizontal tab stops (32 maximum)
 27,68,n1,n2,etc,0
 n1, n2, etc. Between 1 and 255

Set horizontal tab stops every n columns
 27,101,48,n
 n = Between 1 and 127

Reset all tab stops (to defaults)
 27,82

Goes to next Horizontal tab stop
 CTRL U Shift I CTRL U
 9

Relative horizontal tab
 27,92,n1,n2
 n1 = between 0 and 63
 n2 - Between 64 and 127

Absolute horizontal tab in inches
 27,36,n1,n2
 n1 = between 0 and 63
 n2 - Between 64 and 127

Absolute horizontal tab in columns
 27,102,48,n
 n = Between 0 and 127

OTHER PRINTER CONTROL COMMANDS

Set MSB to 1 (MSB = most significant bit)
 27,62

Set MSB to 2
 27,61

Accept MSB as is
 27,35

Delete last character sent
 127

Cancel last line
 24

Immediate print
 27,105,49
 27,105,48 (cancel)

Set printer
 CTRL U Shift Q CTRL U (on-line)
 17 (on-line)
 CTRL U Shift S CTRL U (off-line)
 19 (off-line)

Sound the buzzer
 CTRL U Shift G CTRL U
 7

Escape
 CTRL U FCTN R CTRL U
 27

Bidirectional printing
 27,85,48
 27,85,49 (cancel)

One-line unidirectional printing
 27,60

Manual feed (ignored if DIP 1-4 is ON)
 27,25,0

Auto feed
 27,25,4

Eject paper from ASF (ignored if DIP 1-4 is ON)
 27,25,82

Set print start position on ASF (Ignored if DIP 1-4 is ON)
 27,25,84,n

Reset printer (clears buffer and resets to defaults)
 27,64

GRAPHIC COMMANDS

Print single-density 8-bit graphics
 27,75,n1,n2,m1,m2
 n and m Max 480

Print double-density 8-bit graphics
 27,76,n1,n2,m1,m2
 n and m Max 960

Print double-density,double-speed 8-bit graphics
 27,89,n1,n2,m1,m2
 n and m Max 960

Print quadruple-density 8-bit graphics
 27,90,n1,n2,m1,m2
 n and m Max 1920

Select graphics mode
 27,42,n0,n1,n2,m1,m2

n0 Graphics mode
 0 Normal-density
 1 Double-density
 2 Double-density,double-speed
 3 Quadruple-density
 4 CRT graphics, mode I
 5 Plotter graphics
 6 CRT graphics, mode II

Terminate Tabulation
 CTRL U Shift Z CTRL U
 0

Vertical tabulation
 CTRL U Shift K CTRL U
 11

Dual density graphic printing
 CTRL U FCTN R CTRL U K (on)
 27,75 (on)
 CTRL U FCTN R CTRL U L (off)
 27,76 (off)

From the Bulletin Board

MAIL TO : ALL
 MAIL FROM : BITBITE1
 SENT ON Friday 23/03/90 at 20:01:40

I read the write-up that Stephen Shaw did on TI ARTIST Plus, and I think he did not understand the Vector section of the program. If he knew what it did, and how to use it, he would not have given it such a rubbishing. If you want to ENLARGE or SHRINK or TURN a part of or a whole picture, you use V for Vector. With Vector you can rotate from 0 to 360 degrees, and enlarge or shrink at the same time. Enter is the default for it to stay the same degree, 90 for a quarter of a turn, 180 for half a turn, 270 for three quarters of a turn, or use any of the 360 turns that can be used. Trying to Scale it as Scaling is the hard way to do the job.

The X,Y,Z are for SIZE wanted, 100 per cent is normal, 200 is 2 times enlargement, 50 per cent is 50% of normal size, etc. If want to mirror it use the Enhancement section. Placing the cursor at the top left, then moving to take in the picture, etc, will not change anything, BUT... placing the cursor at the top Right, and doing the same as above will mirror it. For example a right corner will become a left or visa versa. Cursor bottom Right, and do the same as above, and it will mirror from top to bottom, or bottom to top. LARRY

TI-Keys

by Wes Johnson, USA, ©1986, Fairware

TI-Keys is a program allows the user to define 36 keys so that when typed as control keys, they will display up to 31 characters of text or code. The program is menu driven, disables the quit key, and changes the cursor shape when it is active. Other features include saving the user defined keys to disk, editing the keys, and the ability to turn 'off' the program so that true control characters can be typed.

LOADING INSTRUCTIONS

TI-Keys is loadable in two different ways. It is saved in Extended BASIC program format and is named LOAD. RUN this program, and TI-Keys will load quickly. The disadvantage to this method is it will erase any BASIC program already in memory.

The other format is the standard CALL LOAD format. Type CALL INIT :: CALL LOAD("DSKx.MAC"):: CALL LINK("MACRO"). The disadvantage to this method is the time involved loading the program.

USING TI-Keys

Once the program is loaded, BASIC's cursor will be a hollow box. This indicates TI-Keys is loaded and functional. Now press control, and you will notice that the cursor is not blinking. The program is waiting for a key to be pressed. Now press the 'A' key while holding down control. ACCEPT will be printed on the screen. Now release control, and BASIC's cursor will begin blinking again. Make-Keys works with all letter keys A - Z, and the number keys 0 - 9. Any key can be redefined by the user, and saved to disk at any time.

By pressing control =, the menu will appear. The program options are listed on the screen as follows: 1 to EDIT, 2 to SAVE, 3 to LOAD, 4 to TURN OFF KEYS, 5 to RETURN TO BASIC.

1 EDIT - The program will ask 'KEY TO CHANGE?'. Press the key you wish to change, and the 'PRESENT VALUE' of the key will be displayed. Now TI-Keys asks 'CHANGE TO?'. Simply type in the string as it will appear in BASIC, and press enter.

2 SAVE - The program will ask 'SAVE FILENAME'. Type in any valid filename except CS1. If an error occurs, FILE ERROR will be displayed. Press a key to get back to the menu. If no error occurs, the menu will be displayed as soon as the file is saved.

3 LOAD - The instructions for load are the same as option.

4 TURN OFF KEYS - Will turn off TI-Keys so that true control characters can be typed, or so that other assembly programs can be loaded without lock up. **WARNING** If CALL INIT is performed, and another assembly program is loaded, the computer may lock up. This is prevented by turning TI-Keys OFF, and then typing CALL INIT, and loading the other program.

5 RETURN TO BASIC - Does just what it says. When you are finished with the menu, press 5 to get back into BASIC.

PREDEFINED KEYS

When the program is loaded, the keys have the following text strings stored in them.

A - ACCEPT	O - OPEN	2 - \
B - BEEP	P - PRINT	3 -
C - CALL	Q - Q	4 -
D - DELETE "DSK	R - RUN "DSK	5 - \NO PREDEFINED
E - END	S - SAVE "DSK	6 - / VALUE
F - FOR	T - TAB(7 -
G - GOSUB	U - U	8 -
H - HCHAR(V - VCHAR(9 -
I - IF	W - CALL INIT	0 - /
J - JOYST(X - CALL LOAD("DSK	
K - KEY(Y - CALL LOAD(-	
L - LINPUT	Z - CALL LINK("	
M - MERGE "DSK	1 - RUN	
N - NEXT		

This is a "Fairware Program". Try it! If you like it please send the author your \$10.00 thanks. I am a high school student trying to upgrade to DSDD and other nice things! Thanks! Originally appeared in TND of Oct 1988

Wes Johnston
404 Furman Lane
Ladson, SC 29406
United States of America

Combining TI-Keys with Funnelweb

by Charles Good, USA

This is the second half of an article written by Charles Good as it appeared in the magazine Northern NJ 99er's in December, 1989. The first part is similar to USING TI KEYS, by Wes Johnson. ED

I mentioned earlier that special possibilities are available if you use TI-Keys and FUNNELWEB together from a ramdisk. Here is what you can do all automatically just by selecting Extended Basic from the power-up menu. When you boot TI-Keys as LOAD from the ramdisk, you can have TI-Keys automatically boot FUNNELWEB. Many of the TI-Keys macros are not overwritten by the loading of FWB and are available for use from the FWB XBasic user list. This means that any XBasic program you boot up from the FWB XBasic user list can make use of TI-Keys macros from within the program. Also, from the FWB XBasic user list you can enter XBasic command mode by pressing 3(XBasic RETURN) and have the macros available. Neat!

This works with FWB v4.0, v4.1 and v4.11. I have not tried it with earlier versions. When FWB automatically loads after TI-Keys the macros for Ctrl/A through Ctrl/P are overwritten and are no longer available. The remaining macros for Ctrl/Q through Ctrl/Z and Ctrl/1 through Ctrl/O remain available. This is why I have my most used customised macros within these ranges. Here is how to do this. OLD the TI-Keys LOAD program and list it. There are only two lines of XBasic code embedded in some assembly code. With many hybrid assembly/XBasic programs you can not alter the XBasic code and resave up the assembly code. TI-Keys will tolerate slight modifications of its XBasic code. Change line 20 from CALL LINK("MACRO")::CALL LOAD(-31952,255,231,255,231) to RUN "DSK1.LOADFW" and save this altered TI-Keys to your DSK1 configured ramdisk as filename LOAD. Now put FWB's LOAD program on your ramdisk as file name LOADFW. Just select Extended Basic, and everything boots automatically!

You can not successfully use FWB in automatic combination directly upon selection of XBasic from the power-up menu with either of the other two "hot keys" programs. If you boot EZ-keys or SOFT KEYS and then load FWB, the "hot keys" program will not work.

There is some software that will not load from the TI-Keys/FWB combination. Some(but not all) XBasic programs that contain a CALL INIT will lock up the computer if TI-Keys is already in memory(with or without FWB). These cannot be loaded from the FWB XBasic user list. An example is the CALL LOAD version of WORD COUNT that was published in Micropendium. To load such programs you have to first turn off TI-Keys from XBasic command mode by pressing Ctrl/=+. Fortunately, there are only a few programs that are incompatible with TI-Keys. With the TI-Keys/FWB combination, you can use the XBasic user list to boot any assembly D/F80(EA #3) or PROGRAM(EA #5)files, any XBasic program that does not use CALL INIT, and some XBasic programs that do have a CALL INIT.

TI-Keys only affects the FWB XBasic user list. All other parts of FWB, including the other user lists, work normally with the TI-Keys/FWB combination just as if TI-Keys was never present.

TI99/4A Disk Peripheral Functional Specifications, part 2

FILES Subprogram

The default number of files that can be opened simultaneously is three. To modify this number, the FILES subprogram has been provided. The syntax for this subprogram is:

```
CALL FILES(x)  
NEW
```

Where "x" is a number from 1-9, indicating the number of files that can be opened at once. Arithmetic expressions and variables are not allowed. The NEW command following the FILES call has to be considered as part of the FILES call, since FILES will destroy some pointers used by the BASIC interpreter.

WARNING

The usage of the FILES subprogram in a BASIC program is not allowed, and doing so will cause strange results. Likewise a call to FILES without a NEW command immediately following it may cause strange results, ranging from loss of program TO LOSS OF DATA ON DISKETTES. The only way to avoid this is to use the FILES subprogram only in the above defined manner!

The FILES subprogram will check only for the above defined syntax.

```
CALL FILES(2)*2 will execute the same as CALL  
FILES(2)
```

The disk has a standard overhead buffer of 534 bytes. Each open file adds 518 bytes to this buffer area for the disk. If this would leave the user with a buffer of less than 2K bytes as may occur in a 4K system, the files program will return with an INCORRECT STATEMENT error. In case of a syntax error before the right parenthesis ("()"), an INCORRECT STATEMENT will occur.

READ - Read a logical record from an open file.

WRITE - Write a logical record to an open file.

RESTORE/REWIND - relocate the file read/write pointer to a given location in the file. For sequential files this can only be the beginning of the file, whereas for relative record files, the file read/write pointer can be relocated to any logical record in the file by giving the record number.

LOAD - Load a program file into VDP memory. The disk peripheral will check the correct file type before the program is loaded (see section 4.7).

SAVE - Save a program in VDP memory onto the named disk file. The disk peripheral does not check for legal BASIC memory images, so this routine, like the LOAD routine, can be used for transferring binary memory data to and from disk files. Note that the disk file is marked as a program file however, so that files created with a SAVE command can only be read with a LOAD command.

DELETE - Delete the indicated file from the given disk, delete frees up the space occupied by the file for future use.

SCRATCH RECORD - This function is not supported by the disk peripheral.

STATUS - Indicates current status of a file. This includes the logical and physical EOF flags and the protection flag.

INTERFACE TO BASIC

This section will provide a general overview of how the disk peripheral presents itself to the BASIC user. For the BASIC related details the reader is referred to the Home Computer BASIC Language Specs.

OPEN STATEMENT

The BASIC OPEN statement allows the user to access files stored on accessory devices, such as the disk peripheral. It provides the link between a file name and a BASIC file number. Once the file has been OPENED.

The general form of the OPEN statement is:

```
OPEN #file number:"file name"[,option[,  
option[,...]]]
```

In which "option" can be any of the OPEN options available to the user. The user can select the following options:

File organization - SEQUENTIAL or RELATIVE
Open mode - INPUT, OUTPUT, APPEND, or UPDATE
Record type - FIXED or VARIABLE
File life - PERMANENT

FILE NAME SPECIFICATIONS

In order to indicate which drive and which file on it the user wants to access, he must specify a file name in the OPEN statement. This can be in either of two forms:

DSKx.file id or DSK.volname.file id

The actual number of Allocatable Units (AUs) allocated can be computed by using the following rules:

1. VARIABLE length records have an overhead of one byte per record plus one byte per AU.
2. Logical records never cross AU boundaries, i.e. an integer number of logical records has to fit in an AU.

A direct result of these rules is that the maximum length of VARIABLE length records is limited to 254 (2 less than the AU size). Initial allocation of a file is done to avoid scattering of data blocks over a diskette. NOTE: Initial allocation does NOT change the End of File markers, i.e. if 100 records have been initially allocated, the file will still have its EOF set at record 0!! The initial allocation is only used if a file is opened for OUTPUT mode or if a nonexistent file is opened for UPDATE or APPEND mode. It is ignored if the file is opened for any other case.

OPEN-MODE OPERATION

BASIC accepts four access modes:

1. INPUT - Data in a file can only be read. The file has to exist before it can be read.
2. OUTPUT - Data can only be written to a file. A new file is created if one does not exist. If one of the same name exists it will be overwritten unless it is protected.
3. APPEND - Data can only be written at the end of the file. If the file does not exist already this mode is equivalent to OUTPUT. Due to the limitations of the console, this mode can only be used for VARIABLE length records.

4. UPDATE - Data can be both written and read. If the file does not exist, it is created. Otherwise data in an existing file can be read and/or changed and new data can be added or old data can be deleted. UPDATE mode is generally used for files OPENed in RELATIVE mode, although SEQUENTIAL is permitted. VARIABLE length record files can be OPENed in UPDATE mode, however, once a new record is written, all the original data behind this record will be lost. This mechanism is mainly intended for use in intermediary files, i.e. first the data is written out, then it is read back without closing the data file. Note that for UPDATE mode, it is never possible to decrease the size of a file. A re-write will only reset the EOF markers, without releasing the datablocks.

The default OPEN mode is UPDATE, i.e. the file can be both read and written.

OPEN #1:"DSK1.FILEA"

This statement will open a file called "FILEA" on the disk in drive #1 and its file reference number in BASIC is 250. The attributes assigned to this file are:

File-organization - SEQUENTIAL
Open-mode - UPDATE
Record-type - VARIABLE
File-type - DISPLAY
File-life - PERMANENT

Record length - If none existed before it will be 80 else it will be equal to the length of the file when it was created.

OPEN #24:"DSK.MASTER.TABLES",INPUT,RELATIVE,
INTERNAL

Opens a file called "TABLES" on a disk called "MASTER". Drives will be searched in sequence till one is found with the disk call "MASTER", then it will be searched for a file called "TABLES". If it exists it will be made accessible to BASIC otherwise you get an error. The specification for this file are:

File-organization - RELATIVE
Open-mode - INPUT
Record-type - FIXED
File-type - INTERNAL
File-life - PERMANENT
Record-length - is equal to the stored length for the file "TABLES".

OPEN #1:"DSK3.TESTDATA",OUTPUT,FIXED 40,
INTERNAL,RELATIVE

Creates a random access file called "TESTDATA" on drive 3. If it exists already, it is overwritten with the new data. The attributes for this file are:

File-organization - RELATIVE
Open-mode - OUTPUT
Record-type - FIXED, 40 characters
File-type - INTERNAL
File-life - PERMANENT

OPEN #1:"DSK1.",INTERNAL,FIXED 38,INPUT

This command will open the catalog file for sequential input. For more information see section 5.

CLOSE STATEMENT

The CLOSE statement closes the association between the BASIC file-number and the file. After the CLOSE statement is performed, BASIC can no longer access that file, unless it is OPENed again.

The general form of the CLOSE statement is:

CLOSE #file-number[:DELETE]

DELETE STATEMENT

The DELETE statement may be used to remove files that are no longer needed from the disk. This will free up space allocated for the file. The general form for the DELETE statement is:

DELETE "file-name"

The DELETE statement is a statement for which no previous OPEN is required. Therefore it is possible to DELETE a file which is still OPEN for access. If this happens, any future reference to the file, including a CLOSE, will give an error. An example of the described sequence may be:

```
100 OPEN #2:"DSK1.FILE",OUTPUT
110 PRINT #2:"HELLO"
120 DELETE "DSK1.FILE"
130 CLOSE #2
```

Here line 130 will give an error, since the file no longer exists at that point in the program.

4.7 OLD Command

The OLD command allows for retrieval of previously stored programs from a disk. The program must have been stored with a SAVE command, since the disk software will not allow loading of a data file with the OLD command. The general form for the OLD command is:

OLD file-name

Since OLD is a system command that cannot be used in a program, the file-name can be an unquoted string.

OLD DSK1.PROGRAM
Is perfectly legal.

SAVE COMMAND

The SAVE command can be used to save the current program in the 99/4 onto a disk file, which then can be reloaded with an OLD command. The general form for the SAVE command is:

SAVE file-name

CATALOG FILE ACCESS FROM BASIC

The BASIC user can access a disk catalog like a read-only disk file. This disk file has no name and is of the INTERNAL, FIXED length type. An example of a CATALOG file OPEN is:

OPEN #1:"DSK1.",INPUT,INTERNAL,RELATIVE

Since BASIC will automatically default the record length to the current value, it is recommended that the user not specify this length. If he wishes it is 38. Every other record length will result in an error. The CATALOG file acts like it is protected, as it will only allow INPUT access. An attempt to open the CATALOG file for any other mode will result in an error. The data in the CATALOG file is written in the standard BASIC INTERNAL format. Every record in the file contains four items: one string and three numerics. The string indicates the name of the disk, containing up to 10 characters. The numeric items indicate the following:

1. Record-type - Always zero for this record.
2. Total number of AUs on the disk - for a standard 40-track disk this should be 358.
3. Total number of free AUs on the disk.

Record numbers 1-127 contain information about the corresponding file in the CATALOG. Non-existing files will give a null-string as the first item, and 0s for the remaining three items. Existing files will indicate the file name in the string item, and the following in the numeric items:

File-type - negative if file is protected.
1 DISPLAY/FIXED datafile
2 DISPLAY/VARIABLE datafile
3 INTERNAL/FIXED datafile
4 INTERNAL/VARIABLE datafile
5 Memory image file (e.g. BASIC program)

Number of AUs allocated by the file.

Number of bytes per record.

A type 5 file will always indicate a 0 in its third item, since the number of bytes per record has no meaning.

FILE PROTECTION

A user may select to protect any of the files on a disk. This can be done with the disk manager package. The effect of the protected file is that the system disallows any type of destructive access to that file, the following actions are disabled.

continued on page 6

CorComp Disk Controller Card

by W.R. Moseid, USA

When the decision was made to provide a new disk controller card to the TI-99/4A world, we began what turned out to be a long and arduous trip. The metal case (clamshell) was easy. Just use the one that had been designed for the CorComp 32K and RS-232 cards. Then, modify it slightly for a slot to accommodate the new circuit board which would project through the back of the case. This part would hold the connectors for the cables to the internal and external floppy disk drives.

Since all disk controller integrated circuits (chips) can control up to four floppy disk drives, we decided not to restrict people to three drives. With some careful planning, design and care a card could be produced which would support up to four disk drives with any combination from the list below:

- * Single or Double Sided
- * Single or Double Density
- * 35 or 40 Tracks per Diskette Side
- * Any Combination of the Above
- * Automatic Density Recognition

In order to allow the use of a variety of disk drives which people had available, a feature was selected which allowed the owner to set the Head Step Time (Head step time is the time it takes the disk drive read/write heads to step from one track to another). You can select one of four step times for each disk drive in your system. The times selected were 15 milliseconds (ms) 10 ms, 6 ms, 3 ms. This timing is set by positioning a set of DIP (Dual-In-line Pack) switches to various on/off settings. The decision was made to place the DIP switches inside the case. Even though this meant the owner would have to remove the case to set all the DIP switches, this approach was selected for several reasons.

* Safety for the Card (Makes sure power is OFF when the DIP switch is set)

* Safety for the DIP switch (Chances of something hitting it or changing the settings were minimized)

* Lower costs to the Consumer (Assembly Time and Material Costs were lower)

* The 10ms Factory Setting works with most Drives

When the 99/4A Power Up sequence was examined, several interesting things were discovered:

* Plato, Terminal Emulator II, and other Command Modules have a special sequence that runs at that time. (once they get control they do not give it up and the power up scan is not completed.)

* In order to allow the owner the ability to select the CorComp Disk Manager from the Title screen, a special power up Screen had to be made to allow our rapid loader to execute on the single key press.

* Because of the way Plato, Terminal Emulator II and other Command Modules operate during Power up , a choice of two different Menu Screens had to be provided.

When the early timing studies were done, they were conducted with direct I/O using an Assembly Language program (NO GROM). At that time we calculated that the CorComp Disk Controller in double density could run 2 to 4 times faster than the TI Disk Controller. A fact proven by the speed at which the 98 sector Disk Manager program loads into expansion memory. This is based on the way that the CorComp Disk Controller card accesses the diskette and transfers the information into the computer. However, when TI designed their disk memory

system, they made a decision that the memory expansion would not be required. This way, with the controller (old stand alone disk controller) and a console, you could utilize BASIC with the disk system. In order to do this, the TI Disk System and ALL of the Command Modules which use disk expect the information read from the disk to be in the console (VDP RAM) memory. For example, when BASIC, EXTENDED BASIC or the EDITOR/ASSEMBLER load from disk, they expect the information to be in the console memory. If memory expansion is attached then EXTENDED BASIC will move the information to the memory expansion after it is loaded. This moving process is very time consuming. Remember, each sector (256 characters) read or written must be passed through VDP RAM in order to be compatible with TI firmware/software. In the following table are some of the latest timing tests using GROM and VDP RAM:

Time To Load In Seconds

FILE TYPE	# OF SECTORS	TI CONTROLLER		CorComp DISK CONTROLLER			
		SD L/O READY	SD L/O READY	DD L/O READY	DD L/O READY		
BASIC PROGRAM	47	7.2	24.5	7.2	24.5	5.0	22.3
X-B PROGRAM	39	6.3	8.8	6.3	8.8	3.6	6.3
X-B I/V	254	52	---	18.2	---	18.2	---
E/A PROGRAM	25	---	6.3	---	6.3	---	4.2
E/A D/F	80	181	---	55.8	---	54.3	---
				* L/O = CONTROLLER OUT			
				* READY = CURSOR BACK ON SCREEN			

NOTE: The tests were conducted with default interlace selections. Timing may be improved with different interlace selections for the various modules and languages.

With the speed increase indicated in the previous table, we naturally were curious how time is consumed having to use the VDP RAM as an intermediate storage area. The table below shows the time required to copy a disk. When the CorComp Disk Controller copies a disk, VDP RAM does not have to be used as an intermediate storage place saving time.

Type of Copy	TI Disk Controller	CorComp Disk Controller
	WO/TURBO	W/TURBO
SD to SD	151	143
SD to DD	---	135
DD to DD	---	123

Time To Copy 360 Sectors (3 Files) in Seconds

Measuring performance increase figures is always a challenge. This is due to the fact that the "statistics people" can make them do what they want. But, you can see a performance increase in using the CorComp Disk Controller Card and Disk Manager of up to approximately 296% depending on several factors which are:

* Diskette Density	The Operation Being Done
* Diskette File Type (DIS/VAR-worst)	Language Used (GROM - worst case)
* Kind Of Loader (X/B, Editor/Assembler , etc.)	File Sector Location On Diskette

When the Utilities were designed we found that TI changed Extended Basic to prevent its scanning the peripheral DSRs for CALL's (ie; CALL FILES) from running a program. In order to allow the utilities to function with Extended Basic, a list of the utilities had to be provided in the Link Table in extended memory. Thus the syntax for using the CorComp Utilities in X/B is CALL LINK/utility name)(etc.....).

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Module Reviews

by Stephen Shaw, England

As many modules remain available, and it has been some considerable time since reviews of modules appeared, I am taking up a little space to look at some modules in each issue. Please let me know if you want more/less/different details- your comments will be of great help. Requests for reviews of specific modules will be honoured if space allows!

A few modules are going to be very hard to find, but may appear from time to time as second hand items- which you may pass up if you do not know about them. The first module comes into this "rare" category...

MODULE REVIEW- DRIVING DEMON - FUNWARE MODULE.

Driving Demon, like most Funware modules, starts off fairly easy and gets progressively tougher as you go along. Your task is to drive a car, which is at the bottom of the screen, and can be driven left or right. Speed is controlled with joystick up/down, and fire changes gears upwards (auto-down). Perils to avoid are: Cars to overtake- you NEED to overtake cars in order to extend the limited time you have available! These have a habit of wobbling around the screen a bit- and when two come down screen side by side, you need to think fast! Cars come down the screen towards you at varying speeds, but you can control that speed by speeding up or slowing down yourself using joystick up/down.

Oil spills- these can make you spin off the track. You have a warning beep before these appear- first the beep, then a car to overtake, then the oil patch. Overheating- failing to change up despite the red marker and warning squeal! And of course driving off the track! You have a time limit, which goes down with time and up with each car passed. You have a limited number of cars to write off which are increased with super high scores! This is an enjoyable game, not too demanding, but requiring fast reactions for those really high scores. Graphics are slightly blocky but adequate, and control is good.

MODULE REVIEW- JAWBREAKER - TI MODULE PHM3194

Written by Sierra On Line- then just starting, now famous for PC Adventure games such as Leisure Suite Larry.

Jawbreaker is very nearly a variant on that old favourite PacMan, with just a touch of humour thrown in! The screen is divided into horizontal passages, divided by lines which have open doors which slide backwards and forwards. Thus to pass from the top row to the next you must move to (or wait for) a moving door before you can pass down.

YOU are a set of teeth, eagerly munching on boiled sweets, dead easy so far huh! Pity about those tooth despoiling baddies who roll along trying to make your teeth fall out! Your defences are i) avoid them! and ii) Go to one of the four power points in the four screen corners, then you have a limited time to eradicate the baddies (temporarily) and roll up the score (see, just like pac man!).

If you manage to clear a screen, there is personal hygiene to be taken care of, and on screen comes a tooth brush which will give your teeth a rub before you move on to a slightly faster screen!

There are also bonus items which appear for a little while in the middle of the screen. The pac man cherries would be more appropriate perhaps than gulping an umbrella and what have you...

Not too original, graphics are adequate but not mind blowing (apart from the opening title screen), music can get tedious! - this module is made more effective I feel by that toothbrush! It is fun to play, and given rather fewer pills to eat than pacman, is probably easier for younger players. Still a challenge to get a really high score though!

MODULE REVIEW- MINER 49er - TIGERVISION.

Another rarity, this one was a sideways module which plugged into the RIGHT HAND SLOT of the console.

This one is a platform game- Bounty Bob has to cover every bit of floor while avoiding the perils of the mine- apparently radioactive mutants whose touch is death! He can however eradicate them by first touching a variety of treasures with the mine is littered (for a limited period the monsters can then be wiped out, when they look to me very like walking floppy disks!).

There are ladders to go up and down, slides to slide down- not always deliberately!- even LIFTS (to use a lift, enter it and press a number button, 1 is ground floor while 4 is top floor). There are a large number of variations on how to move around! You can jump across small distances, but trying to jump down too far tends to be fatal.

Positioning of the character for some jumps is pixel precise, which is how some of the later screens become very hard indeed. You score for each element of floor covered, and for each treasure taken, and there is a counting down bonus awarded at the completion of each screen.

Graphics are reasonable, control sometimes seems a little too precise! and action is fast enough. When you hit a problem area it can be VERY frustrating as you must solve the problem before you can go any farther.

MODULE REVIEW- MUNCHMOBILE- TEXAS INSTRUMENTS PHM3146.

This module is relatively unknown but still available, and is one which I personally find rather cute to play. The basic idea is that of scenery scrolling down the screen while you drive along it...

Your car is MOST unusual- it has hands! which you operate to pick up a number of treasures, including extra fuel to keep you going! You MUST keep to the road. At cross roads you must move the car not only left and right, but up and down in order to avoid hitting traffic going across your road! Jump the traffic lights at your own risk.

To pick up an item- not easy- the car has two eyes, only one of which is open at a time. Press fire and an arm comes out of the side with the open eye. Hold fire down until the hand is extended far enough, and when over the item, press fire again to retract the arm. To make the arm come out on the opposite side of the car, press fire to extend the arm a little, then press fire to retract it and hold fire down until arm is extending on opposite side!

Your arm can collide with bushes and waste bins, this delays matters a little but is not fatal. Watch out going over the covered bridge, there are a couple of cars coming the opposite way to avoid.

The graphics on this game are blocky, but adequate. The car is CUTE. There are several different roads to traverse, getting harder as you go along. And of course you must watch your petrol! I like this one. (Driving into the garage at the end of the road can be tricky!).

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LOADING CorComp DISK MANAGER FROM EDITOR/ASSEMBLER

This bit of information is reprinted from Miller's Graphics publication "The Smart Programmer". It was printed on page 5 of the July, 1984 issue. For everyone with a CorComp Disk Controller card, Tom Knight sent us the following program. This short program allows you to load the CorComp Disk Manager from the Editor/Assembler module with option 3 - Load and Run. Thanks Tom.

labels	instr	operands	comments
	IDT	'LOADMNGR'	title for assembler
	AORG	>2700	Absolute load address
	DEF	MGR	start name for REF/DEF table
MGR	LWPI	>83E0	start of code
	MOV	R11,>8300	get workspace address
	LI	R12,>1100	save return address
	SBO	0	CRU address of dc into R12
	SBZ	11	turn on card
	BL	>44F2	select correct bank of ROM
	NOP		jump to routine in ROM
	SBZ	0	error return
	MOV	>8300,R11	turn off card
	B	*R11	restore return address
	END		go to it
			assembler quits here!

How Does It Work?

by Geoff Trott

Now, where was I? It seems such a long time since I wrote the last article in the series, probably because it was about 2 months ago! I had just mentioned, I think, that when power is applied to the chips in the console, they all start doing their own thing and then at a defined time after this a pulse is generated which resets the activities of the TMS9900 (CPU), TMS9901 (PIO and timer) and the TMS9929A (video processor). For the CPU, this means that the processor stops what it is doing (interrupt), gets the two bytes at addresses 0000h and 0001h, stores them in one of its internal registers or memory cells (16 bit cell this time, hence the two 8 bit bytes) called the Workspace Register, then gets the two bytes at addresses 0002h and 0003h and stores them in another internal register called the Program Counter. The Program Counter uses only the most significant 15 bits of its data, as it is used to hold the address of the next instruction to be executed and this is always 16 bits and stored in two bytes starting at an even address (least significant bit of the address is zero).

Once the CPU has performed these two tasks it returns to its normal cycle of activity, namely, fetch an instruction from the memory address in the program counter (16 bits or two bytes), decode the instruction and execute it, increment the contents of the program counter (by 2), fetch the instruction from the memory address in the program counter, and so on for ever. Of course, in the execution of an instruction some exciting things may happen. The instruction may require more than one word to be read in, in which case the program counter would have to be incremented (by two) for each of these, or the instruction may require a jump or branch to a different part of the program which means that the contents of the program counter may be changed by the execution of an instruction. In general, consecutive instructions of a program are stored in consecutive even addresses in memory so that the normal cycle of operation consists of simple incrementing of the program counter.

So, after the reset pulse to the processor, it starts executing a program whose first instruction is stored at the address in bytes 0002h and 0003h. This value, stored in the system ROM, is 0024h, which is an address in the system ROM area. The program which starts at this address is quite large (about 3K bytes) and its function is to read in the contents of the system GROM, one byte at a time, and to perform various functions depending on the values of these bytes. It is the contents of the system GROM which cause the title screen to be set up and displayed and which waits for a key press, then displays the menu and decides which item on the menu will be started when the next key is pressed. The contents of the system GROM are in a language, which TI designed, called GPL (Graphics Programming Language?) and the program which the CPU is running from system ROM is interpreting the GPL instructions in the system GROM and so is called the GPL interpreter. The GPL language is quite powerful and yet compact so that it is able to do quite a lot in very few instructions. Until recently it was not a very useful language to the user as a program written in GPL could only be run out of GROMs or GROM emulators. A few years ago some clever people moved the GPL interpreter out of system ROM and made a few changes so that it could read the GPL program out of normal CPU memory. Now it is possible to dump the contents of GROMs in modules to disk and add the GPL interpreter code to them and have the programs run in expansion memory without requiring the module at all. This means that now we could write our own programs in GPL and have them run out of expansion memory if we wished to. Unfortunately there is not a great deal of information about GPL readily available.

However, I digress a bit. What are GROMs do I hear you ask? They are Graphics Read Only Memories and they are a rather clever little chip which TI produced which contain 6K bytes of read only memory and a 16 bit auto

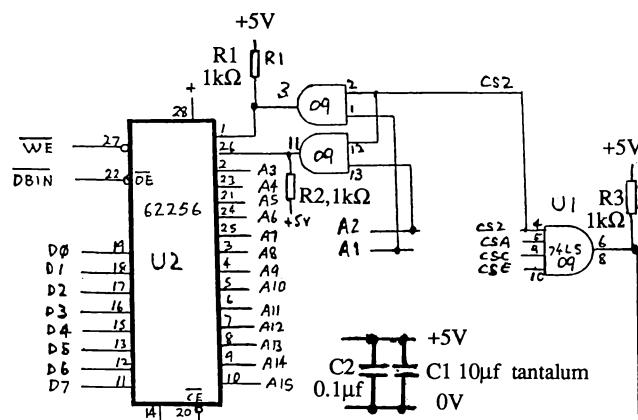
incrementing address counter. What this means is that whenever a byte is read from the memory, the address is automatically incremented inside the chip so that the next read will get the data in the following memory location. So just doing consecutive reads to a GROM will cause all the data in the GROM to emerge one byte at a time. The clever thing about these devices is that they only have 16 pins and up to eight of them can be connected completely in parallel and work correctly. Each GROM only responds when it is addressed as they all have their base address programmed into them.

Inside the console there are three GROMs. One is the system GROM which responds to addresses 0000h to 17FFh. The other two contain the GPL program which is the BASIC interpreter and these respond to addresses 2000h to 37FFh and 4000h to 57FFh. The missing addresses are just not present in the actual GROMs. If we use a GROM emulator or a GPL interpreter using expansion memory, these address gaps are not required and all addresses can be used. That is, the gaps are nothing to do with the GPL language, just the hardware.

I digress again and have run out of space for this month. Next month I will look at what the GPL program in the system GROM does on start up. Perhaps you are now starting to understand why our computer is a bit difficult to come to grips with. This is one of its strengths as well as a bit of a pain, as it means that the operating system is well defined and not easy to change so that third party software suppliers have to write their software correctly to use the facilities of the console and cannot make the sort of short cuts which lead to incompatibilities with items of hardware. O

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Single chip 32K Memory Expansion



5) Connect DBIN and CS2, CSA, CSB and CSE to the motherboard as per instructions in the December TND.

6) Connect A1 and A2 to U504 on the motherboard as indicated.

7) Reinsert the GROM port (with the memory board attached) into the motherboard socket and secure the PCB to the top of the motherboard metal shield with double sided adhesive tape.

8) Reassemble the console as per December article.

9) Test the memory expansion with the Extended basic "SIZE" command. If it is working, you will see an additional 24K of memory program space.

32K Software

Contact the club shop for software which runs out of 32K memory expansion. Numerous programs are available both on cassette and on disk. O

Newsletter Update

by Geoff Trott

We (the editorial staff) have been a bit slack with the newsletters this year until they have piled up to be quite a few. The directors have decided to reduce the number of exchanges made with overseas groups to try and save money, so this will be the last time you may see some of them. Coupled with this is the fact that the overseas user groups are also having problems with money and membership numbers and some of them are no longer interested in exchanges. Also, there does not seem to be much desire by you, our members, to look at these newsletters in the library. Perhaps that is a good sign in that we are providing you with enough information as it is or perhaps it shows a lack of curiosity which is a bit worrying. Never mind, back to the newsletters. First we have the Australian groups.

ATICC from Adelaide, Feb 1990: a number of articles from elsewhere on topics like configuring Funnelweb, CALL KEY, reducing the buzz from the modulator, assembler language and the start of their software library catalogue.

Bug Bytes from Brisbane, Feb 1990: an editorial on keeping and getting new members, a note from Garry Christensen saying he has two Myarc HFDC cards for sale plus a list of new software available, a number puzzle and various other programs and articles. Mar 1990 contains suggestions that the Australian groups share their software libraries, a review of Funnelweb v4.21 and Diskreview, software including a spelling checker from Asgard, Missing Link from Texaments, review of Beyond Video Chess, review of Missing Link, Repairer's Roundup from Col Christensen, an article on Supertrace and some articles from other newsletters.

Hunter Valley, Dec 1989: review of TI-Viditel2 including translation from the Dutch, Struggling Forth from Richard Terry, on power supplies from Tony McGovern, RAMdisk (Quest) loss of data problems solved from Ron Klienschafer, and many more interesting articles. Feb 1990 features the visit by Bob Carmany from the USA and the release of his program writer package as well as the usual good articles from various sources. Mar 1990 has a review of Viditel, the second article in the return of Jack Sughrue, some C routines, joystick adaptor and some CALL LOADS. This newsletter is always worth reading.

Melbourne Times, Nov 1989: the issue after their Faire in which they are upset that groups from Newcastle and Sydney failed to arrive, Peter Gleed has started a project for a Bridge (card game) program and many other articles.

Overseas Newsletters

The first of these is 99 Times Better from MSP99 user group, St. Paul, Mn, Feb 1990. This has an article on printer control macro codes.

CIM99 from Montreal, Canada, Jan 1990, Feb 1990 and Mar 1990. These are always regular but mostly in French, which makes them difficult to understand.

Lehigh 99'er Computer Group, Pa, Feb 1990: mention of a new graphics mode and how to use from assembler and an article on FORTRAN.

Northern NJ 99er's Users Group, NJ, Jan 1990 and Feb 1990: article on Boolean expressions in programs, article on TMS99105 CPU, what to look for when buying a disk drive, sorting on disk and a Joypaint help sheet.

Ottawa Newsletter, Canada, Jan 1990 and Feb 1990: trouble with exchanges, assembly utility programs for Extended BASIC with 32K battery backed up console memory, TI-Base review, hints and tips (always good value), Fast Extended BASIC with a program on reversing the colours for characters, TI-Artist small fonts in

Extended BASIC and a program to help understand binary and hexadecimal.

The PUG Peripheral, Pittsburgh, Pa, Jan 1990, Feb 1990 and Mar 1990: more on printers, high resolution graphics, conversion of Forth screens to DV80 files and back again, program to calculate the Fog index, Kiddie Corner, tips for Multiplan, Funnelweb and TI-Base, article on data communications, Jack Sughrue's New-Age/99, review of Musical Scales from Jim Peterson, release of Giffy by Barry Boone, release of Spell It and Edu Pak by Asgard, <BUILD...DOES> in Forth and information on the changes to CorComp.

ROM, Orange County, Ca, Jan 1990 and Feb 1990: announces complete TIPS (38 SSSD disks of graphics), Remind*Me, TI Tutorial, updates for BOOT (12/89) and Archiver (3.03G), review of Harrison Music, noted that more than 2 million TI99/4As were sold (8th in current sales numbers), Turbo copy for TI disk controllers, review of Pix Pro, more on Write Right, article on assembly language with utility programs, And So Forth and a calendar program.

Spirit of 99, Columbus, Oh, Jan 1990, Feb 1990 and Mar 1990: index for 1989, review of Picasso (better than Page Pro!), review of Tunnels of Doom, Tips from the Tigercub, Jack Sughrue's New-Age/99, experiments with tokens, TI-Base tutorial, using a modem, TI-Artist tutorial and other interesting bits from Jim Peterson.

Snug, Sacramento, Ca, Jan 1990: apart from catching up on many months when this newsletter did not appear, most of the issue is taken up with a game, Vorpal Bunny in Extended BASIC or FORTRAN.

TI Focus, Hamilton, Canada, Jan 1990, Feb 1990 and Mar 1990: an informative article on TI-Writer by Tony McGovern, review of MDOS Forth, review of Pix Pro, review of 9640 FORTRAN, review of Mailing List Manager, how to build a 128K card, New-Age/99 by Jack Sughrue, review of movie option of TI-Artist Plus, review of Page Pro 99 v1.5, how to recover a blown disk, taxation template for Multiplan (Canadian), tips for TI-Base and a review of TI-Sort.

Tic Toc from Rocky Mountain 99ers, Denver, Co, Jan 1990 and Feb 1990: TI-Base tutorial, a simple program to generate labels and formatter printing problems.

TIdbits from Mid South 99 Users Group, Memphis, Tn, Jan 1990, Feb 1990 and Mar 1990: review of Page Pro Utilities, review of TI-Artist Plus, some TI-Base tips, history of International 99/4 User Group, list of TI99/4A suppliers and BBS (North America), notice that Asgard Peripherals is seeking interest from people in an 80 column card like Mechatronic's so they can start making them, review of Missing Link, Four-A/Talk returns with Bill Gaskill, 9640 games, availability of some chip manuals, TI99/4A history for the months of January and February, modify the Myarc HFDC card to handle floppy drives only by joining pin 1 to pin 8 of U21 (a 74LS25-link must be removed to use hard disk) and MDOS nearing completion?

Topics from LA 99ers, Los Angeles, Ca, Sep 1989, Oct 1989, Jan 1990 and Feb 1990: Four-A/Talk from Bill Gaskill, sorting and speech in Forth by Earl Raguse, Chick De Marti's hints and tips including some for TI-Base, Forth from Long Island 99'er Users Group, some Extended BASIC tips from Tony McGovern plus a lot of interesting reading and lists of programs on disks. o

continued from page 1

I was also happy to see and meet a group from Newcastle. Tony and Will gave a beaut demonstration of recently developed software. Tony is well on the way with the next version of Funnelweb(V. 4.30) and Will gave an impressive demonstration of his latest version of Disc Hacker which I must get at the next meeting.

In the June edition of the TND I plan on explaining how I use the TI as a teacher. o

Regional Group Reports

Meeting Summary For MAY

Banana Coast	13/05/90	Sawtell
Carlingford	16/05/90	Carlingford
Central Coast	12/05/90	Saratoga
Glebe	10/05/90	Glebe
Illawarra	14/05/90	Keiraville
Liverpool	11/05/90	
Northern Suburbs	24/05/90	?????
Sutherland	18/05/90	Jannali

BANANA COAST Regional Group (Coffs Harbour area)

Regular meetings are held in the Sawtell Tennis Club on the second Sunday of the month at 2 pm sharp. For information on meetings of the Banana Coast group, contact Kevin Cox at 7 Dewing Close, Bayldon, telephone (066)53 2649, or John Ryan of Mullaway via the BBS, user name SARA, or telephone (066)54 1451.

CARLINGFORD Regional Group

Regular meetings are normally on the third Wednesday of each month at 7.30pm. Contact Chris Buttner, 79 Jenkins Rd, Carlingford, (02)871 7753, for more information.

CENTRAL COAST Regional Group

Regular meetings are now normally held on the second Saturday of each month, 6.30pm at the home of John Goulton, 34 Mimosa Ave., Saratoga, (043)69 3990. Contact Russell Welham (043)92 4000.

GLEBE Regional Group

Regular meetings are normally on the Thursday evening following the first Saturday of the month, at 8pm at 43 Boyce St, Glebe. Contact Mike Slattery, (02)692 0559.

ILLAWARRA Regional Group

Regular meetings are normally on the second Monday of each month, except January, at 7.30pm, Keiraville Public School, Gipps Rd, Keiraville, opposite the Keiraville shopping centre. Contact Lou Amadio on (042)28 4906 for more information.

LIVERPOOL Regional Group

Regular meeting date is the Friday following the TIsHUG Sydney meeting at 7.30 pm. Contact Larry Saunders (02)644 7377 (home) or (02)642 7418 (work) for more information.

NORTHERN SUBURBS Regional Group

Regular meetings are held on the fourth Thursday of the month. If you want any information please ring Dennis Norman on (02)452 3920, or Dick Warburton on (02)918 8132.

Come and join in our fun. Dick Warburton.

SUTHERLAND Regional Group

Regular meetings are held on the third Friday of each month at the home of Peter Young, 51 Jannali Avenue, Jannali at 7.30pm. Group co-ordinator is Peter Young, (02) 528 8775. BBS Contact is Gary Wilson, user name VK2YGW on this BBS.

Peter Young Regional Co-ordinator

TIsHUG in Sydney

Monthly meetings start promptly at 2pm (except for full day tutorials) on the first Saturday of the month that is not part of a long weekend. They are now held at the RYDE INFANTS SCHOOL, Tucker Street(Post Office end), Ryde. Regular items include news from the directors, the publications library, the shop, and demonstrations of monthly software. The meeting this month will be a full day workshop on the 5th of May, beginning at 10am(see Secretary's Notes for more details). The idea is for everybody to bring their own system along(not compulsory, you can come to look) and receive any help required on your own system. For those

who like games, the game of the month will be MINER 2049er and it will set up at the meeting with a competition in mind.

JUNE 2, 1990 - Carried over from March, the Demo of the software in EPROM fitted to a RAM Disk. Games with Shane.

Other meeting dates for 1990 will be as follows. All topics have yet to be defined.

JULY 7	OCTOBER 6
AUGUST 4	NOVEMBER 3
SEPTEMBER 1	DECEMBER 1

Sorcerer, part 3

A Walk Through, by Scorpia, USA

From the Ruins, go down into the Dungeon, down again to the Highway, and then East to the Toll Gate and the sleeping Gnome. Wake him up and give him your Zorkmid. He will open the gate, then promptly fall asleep again. Go East through the gate.

Ignore the store; that is another red herring in the game. Continue East to the end of the highway. There is a hut here, but we will not be looking in there just now. Instead, go North to the Entrance Hall, and then North again to the Glass Arch. You are about to enter the infamous Glass Maze.

Getting through it the first time is quite easy; getting out again is quite another matter. There are two ways back, the long and hard way, or the quick and dirty way. If you want to go the easy route, learn Gaspar once and Fweep once, then Gaspar yourself right now. If you want do to it the hard way, learn Fweep three times.

Ok, drop everything here, go East into the Maze, and Fweep yourself. Now fly along the following route: North, East, South, South, West, Down, East, East, North, North, Up, Up, South, East and you are now at the Hollow. Here you will find the Swanzp scroll, but you can not do much until Fweep wears off. So wait around until you are human again.

As soon as you pick up the scroll, the maze layout will change. Oops! Now what? Well, first, drop the scroll down the hole (it is the chimney of the little hut). Now what you do next depends on how you decided to get back out. If you opted for quick and dirty, walk West, West, South, East, and you will fall through the Maze and splatter. However, the Gaspar spell will activate, and your Guardian Angel will restore you to life at the spot the spell was cast, which in this case was the Glass Arch.

However, if you want to do it the hard way, then here is how: Fweep yourself, then fly the following route: West, West, South, Down, Down, West, West, Up, Up, North, North, Down, East. At about this point, the spell will wear off. Fweep again, and continue: South, East, North, Down, West, South, West, Up, West, and you are back at the Arch again. Whew!!

Again, wait around till the spell wears off, then pick up everything and go to the hut. In the fireplace, you will see the Swanzo scroll. Gnusto the spell, and then take a nap, because by now you are tired again.

Awakening refreshed, leave the hut and head on back to the Toll Gate. The Gnome is still here, and still asleep, so now is your chance: search him, and you will find your Zorkmid! All right! Now, keep going West until you come to the Bend, where you head Southwest to the edge of the crater, then Down into the crater itself. From there, move along South into the North/South tunnel, and the Southwest to the Amusement Park entrance.

"Sorcerer" is copyrighted 1984 by Infocom

This walkthru is copyrighted 1984 by Scorpia